THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

EDITORIAL STAFF

WARREN L. BAKER
Editor
J. KENT RIDLEY
Managing Editor

ASSOCIATE EDITORS

L. J. LOGAN — BRAD MILLS
WM. V. GROSS

DISTRICT EDITORS

B. F. LINZ.....Washington
GRADY TRIPLETT, FRANK TAYLOR, JACK CASBURN .....Tulsa
H. H. KING.....Fort Worth
W. E. GREEN.....Los Angeles
EARL S. POST.....San Antonio
R. W. BYRAM.....Austin
CHAS. LEYENDECKER.....Houston

PUBLISHED BY

THE GULF PUBLISHING COMPANY
HOUSTON, TEXAS

R. L. DUDLEY, *President*
A. L. BURNS, *General Manager*
S. W. ROBINSON, *Editorial Director*

Staff correspondents at all important points.

Member Audit Bureau of Circulation
Member Associated Business Papers, Inc.

BRANCH OFFICES

NEW YORK.....250 Park Ave.
PITTSBURGH....Standard Life Bldg.
CHICAGO.....332 S. Michigan Ave.
LOS ANGELES.....Haas Bldg.
TULSA.....Hunt Bldg.
FORT WORTH..W. T. Waggoner Bldg.
SAN ANTONIO.....112 Jefferson St.
WASHINGTON.....Albee Bldg

ADVERTISING STAFF

DICK SWINSKY.....New York
A. W. BROWNELL, JR.....New York
C. A. WARDLEY.....Pittsburgh
T. W. NELSON.....Chicago
J. F. CARTER, JR.....Tulsa
W. E. GREEN.....Los Angeles
CHAS. WYATT.....Houston

CIRCULATION DEPARTMENT

J. T. WAGONER.....Manager

SPECIALIZED OIL JOURNALS

Published by

THE GULF PUBLISHING COMPANY

Oil Man's Calendar

Nov. 17-19	American Institute of Chemical Engineers, Annual Meeting, St. Louis, Missouri.
19	Mid-Continent Oil and Gas Association, Annual Membership Meeting, Kansas-Oklahoma Division, Tulsa, Oklahoma.
Dec. 2-3	Joint Annual Meeting, Standard Committees of General Mid-Continent Oil and Gas Association on Federal Income and Excise Taxation and on State and Local Taxation, Baker Hotel, Dallas, Texas.
6-10	American Society of Mechanical Engineers, New York.
14	Mid-Continent Oil and Gas Association, Annual Meeting of General Board of Directors, Tulsa, Okla.
14	East Texas Chapter, American Petroleum Institute, Kilgore, Texas.
1938 Jan. 24-25	Northwest Petroleum Association, Minot, North Dakota.
Feb. 14-18	American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.
Mar. 16-18	Annual Meeting, American Association of Petroleum Geologists, Roosevelt Hotel, New Orleans, La.

Contents « November 15, 1937

Volume 87, Number 10

The Changing Panorama.....9 and 10
Hope Justified Despite Uncertainties..... 14
By L. J. LOGAN

A.P.I. Convention News
Industry Deserves to Be Left Free..... 16
By GRADY TRIPLETT
Byles Again Heads A.P.I..... 17
Engineers Show Wide Interest in Current Problems and Research..... 19
By BRAD MILLS
Crawford Heads the Equipment Suppliers..... 18

General News
Oil in the Courts..... 11
Markets Are Disturbed..... 12
Proration Matters..... 13
Labor Situation..... 20
Oil at Conventions..... 22
Men in the Industrys News.....53 and 54
Squeaks from the Bull Wheel..... 88
In the Financial Field..... 58

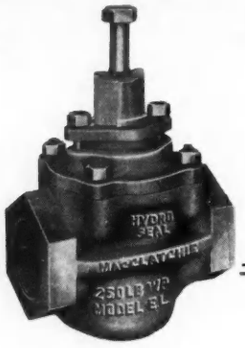
Engineering and Technical.....16 to 52
Hydraulic Pressure Actuated Bottom Hole Pumping Unit One of First in Mid-Continent..... 23
By FRANK B. TAYLOR
Gas-Oil Ratio Control in Flowing Wells..... 28
By R. J. SULLIVAN
Selection of Screen Openings for Unconsolidated Sands..... 38
By C. J. COBERLY
Operation and Maintenance of Multi-Cylinder Gas Engines.... 46
By H. R. HOGABOOM

Markets and Statistics.....55 to 57
World Developments..... 60
Index to Field Developments..... 63
New Products and Manufacturers News.....86 and 87

Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

Copyrighted 1937 by The Gulf Publishing Company.

NO MATTER WHAT YOUR VALVE REQUIREMENTS



. . . there's a MacClatchie "Hydro-Seal" Plug Valve to fill it. MacClatchie Plug Valves are made in sizes from ½" to 20", working pressures of 250 to 3,000 pounds, hand or gear operated, and with union, flanged or threaded ends.

In **every model** you get the plus performance of MacClatchie's exclusive "Hydro-Seal" principle—grease expanded lips that spread evenly against the walls of the body and insure an absolutely pressure-tight seal under all conditions. A simple turn of the grease screw maintains the seal and completely lubricates the entire plug—a further check against leakage. In high pressure models easy turning is assured by elimination of compressible packing and the use of ball bearings to carry the thrust load.

MacCLATCHIE MFG. COMPANY

COMPTON, CALIF. HOUSTON, TEXAS

Export: Geo. R. Woods, 17 Battery Place, New York, N. Y.

Pipe Fittings that save time

KENNEDY Cast Iron Flanged Pipe Fittings and Kennedy Malleable Iron Screwed Pipe Fittings have enabled many a pipe fitter and machinist to make records in connecting up pipe lines quickly, accurately and without make-over. Their sound, flawless metal, their accurate machine work, and their true alignment of flanges and threads, all help to speed up pipe fitting jobs and assure satisfactory workmanship.

Kennedy Fittings are made in all standard types and sizes and can be obtained from your local supply house.

The Kennedy Valve Mfg. Co., Elmira, N. Y.

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

LOOKING AHEAD

WITH THE EDITOR

Gas/Oil Ratio Control, and other A.P.I. Subjects . . .

Circumferential Field Welding . . . Remedying Gas Lock Conditions.

IF YOU are a petroleum engineer, or just a plain, practical operator interested in saving money on drilling and production practice, you will see enough in the current issue to make you look forward to the conclusion soon of such articles as those appearing herein by men like Hogaboom, Coberly and Sullivan. Then on top of that . . .

There were some other valuable and highly practicable ideas set forth in other superior papers also presented at the A.P.I. in Chicago last week which space simply would not permit printing in this issue. But The OIL WEEKLY will select some of the best and give them to you as early as possible. (A few are already in type.)

MOREOVER, as this is written, ye scribe's desk top is covered with engravings for illustrations of short article that are gems for the operator, be he the product of M.I.T. or one who came up the hill on the rough path of experience starting at Roustabout Station. Listen to the titles of some of those on the sidelines waiting to get into the game: "Sturdy Unitized Oil Drum Rack Has Advantages," "An Evaluating Table with Limiting Elements," "Remedying Gas Lock Conditions in Pumping Wells," "Induced Draught Reduces Fire Hazards," "Improved Lubrication of Valve Stem Guide," "Loading Explosives Into Wells," "Checking Flange Leaks in Discharge Line," and so on, danged nigh ad infinitum.

Northcutt Ely of Washington, D. C., who is always interesting when talking about interstate or intrastate commerce, proration, or any of the legal aspects of oil company administration, is among the authors who soon will appear in The OIL WEEKLY.

The changing panorama

this week

DESPITE the fact that it contained a holiday, the past week brought more than a normal train of important events.

While developments at Madison, Chicago, and Washington were more spectacular, those at the oil fields, refineries, and service stations probably were more significant.

The trial at Madison was eventful, and the voices of leaders of the industry resounded at Chicago, while important matters were brewing at Washington on the eve of the special session of Congress.

Markets Disturbed

But in the oil country, in the refining centers, and at the service stations transpired developments that may be evaluated eventually in terms of dollars and cents.

The markets of the industry were reflecting increased instability. And even the more optimistic of former weeks were beginning to waver in the hope that the industry would be able to keep its general market situation stabilized, despite disturbed general business and the recent weakening of gasoline prices.

Lower Crude Prices Talked

Whereas the market situation previously had been marred only by declining tank car prices of gasoline at the refineries, it was beginning last week to show more serious symptoms.

The gasoline tank car prices, which already had declined beyond most expectations, dropped further; and prices to dealers and to the public were reduced in several sections of the country. Further reductions of service station postings were threatened.

Furthermore, talk of possible crude price reductions began to receive serious attention, having been given a firmer foundation by the growing severity of the gasoline market decline.

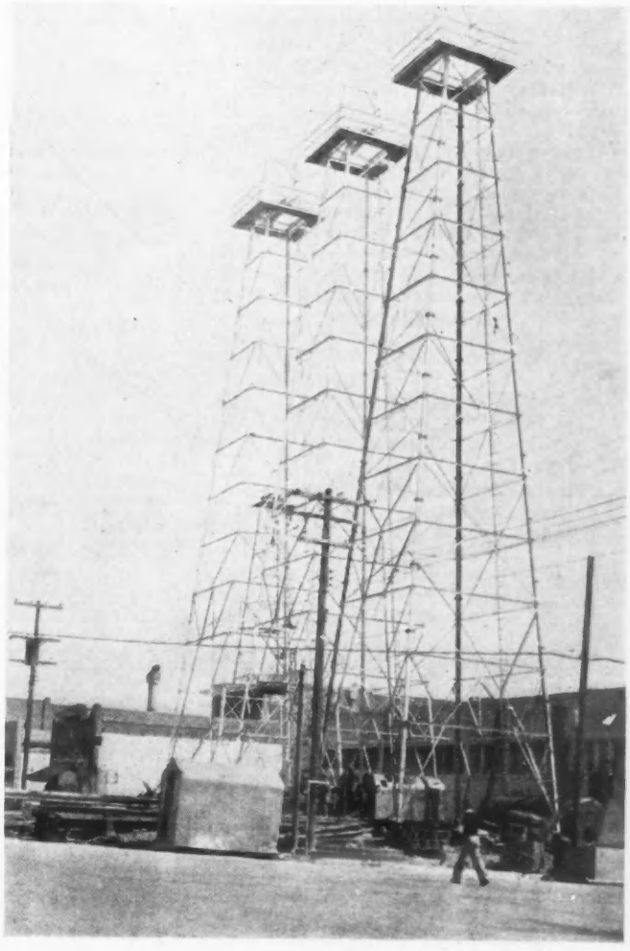
For it was becoming obvious that refiners were talking sound economics in protesting that if they were obliged to sell gasoline at the new, lower prevailing prices, they must be able to buy crude at proportionately lower prices.

Production Curtailment Proposed

Apparently in recognition of the precarious condition of the industry's markets, a member of the Texas Railroad Commission, in attendance at the American Petroleum Institute annual meeting at Chicago, advocated immediate curtailment of United States crude oil production 175,000 barrels daily.

In line with that idea, the Texas Railroad Commission from its Austin headquarters announced that the Texas allowables would be cut about 70,000 barrels daily November 16, as the Texas part of the proposed curtailment, following a statewide proration hearing November 15. The Texas allowables normally are changed only at the beginning of each month.

Similar recognition of the disturbed market situation of the industry was that by officials of Michigan,



ALTHOUGH DRILLED to a density averaging one well to every 5.8 acres already, drilling activity in the East Texas field continues at a high rate. Here are three wells being drilled on a small lot in the heart of the Kilgore business section. Since individual wells are granted a minimum allowable of 20 barrels each, such operations have an advantage over areas using wider spacing.

who delayed sale of leases on state-owned lands, with the explanation that development of the leases might lead to further disturbance of already unsettled oil markets in the state.

Governor E. W. Marland of Oklahoma also took cognizance of the discussion of possible crude price reductions. But ironically, the attitude of the governor, a former oil operator, was in contrast with the sympathetic actions of the Texas and Michigan officials. He offered the threat that Oklahoma would raise its tax on crude production in the event of crude price reductions.

Crude Market Has Advantages

Despite all the anxiety over the crude market, however, the only actual damage so far has been a 10-cent reduction by a small purchaser in West Texas. And in the particular fields affected, moreover, the crude market has been soft for several months.

Meanwhile, various factors are tending to bolster the crude market, in the face of the adverse effects of the gasoline situation.

Chief among these favorable factors is the prospect that production will be maintained in balance with demand, as evidenced by last week's move toward further curtailment.

Second among the advantages is the desirable crude oil inventory situation. The crude stocks are only about 5 percent larger than at this time last year, while in terms of days' supply they are smaller, as petroleum demand has been running about 10 percent higher this year than last year.

Demand Tapering Off

In view of the diminishing activity in various lines of business, the advantages and disadvantages of the oil industry are coming under careful scrutiny.

An advantage that stands out conspicuously is the fact that oil has attained the status of a virtual necessity, in this age of motors and machines, assuring the industry a good demand for its products in lean years as well as fat.

However, the demand dropped off enough in the past depression to cause market difficulties; and recent trends justify some anxiety. For there has been some tapering off of oil consumption.

While the total demand for petroleum in the first 9 months of this year was 11.1 percent larger than for the similar period last year, September demand was only 9.8 percent larger this year than last year.

Drilling

SCARCITY of heavy duty rotary rigs and machines for drilling-in operations threatens to check expansion of field work in the K-M-A deep sector, North Texas. Southern Young County has scored a prolific producer from deeper lime zone.

The search for production in Ellenberger lime in northwestern Eastland County, West Central Texas, has been rewarded by a 900-barrel natural well at 4025 feet. Avoca pool, northeastern Jones County, is assured of a 1-mile north extension. Rotan pool, Fisher County, will reach the pumping stage shortly.

The 2900-foot lime horizon in Chalk field, Howard County, West Texas, was advanced 1½ miles northeast.

Nueces County, South Texas, now has 13 fields following opening of one 2½ miles northeast of the Benton-King district.

New Oklahoma Field Promised.

A Hughes County wildcat last week appeared to be opening another pool for Oklahoma. Important developments were beginning to shape up at a test being drilled by Gulf Oil Corporation in the old Fox area of Carter County.

Kansas opened a new Wilcox sand pool in Sedgwick County last week, 7 miles east of Wichita. In Ford County, southwest part of the state, a possible pool opener is being closely eyed.

Prospects that the Vacuum pool will become the next active drilling center in Lea County, New Mexico, were enhanced when a 3¼-mile south extension well flowed 440 barrels natural from upper lime.

In Michigan three new fields are in prospect and an 80-test wildcat program is in progress.

Market briefs

Outlook—Hopeful despite weak gasoline market.

Crude Market—Prices holding at established levels.

Refined Oil Markets—Gasoline market remains unsteady.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
November 6...	3,533,150	3,325,000
Previous week.	3,602,950	3,345,000
Year ago.....	2,973,800	2,920,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
October 30.....	307,140,000
Week ago.....	306,556,000
Year ago.....	291,040,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
November 6...	67,271,000	120,925,000
Week ago.....	66,836,000	121,070,000
Year ago.....	57,309,000	112,924,000

DRILLING

Period	Wells Completed
Past week.....	572
Previous week.....	614
Year ago.....	424
Year Total:	
This year.....	25,579
Last year.....	21,044

Technology

POSSIBLY the most accurate key to the present trend in oil field technology obtainable is afforded by a study of subjects presented before the technical session of the American Petroleum Institute in Chicago last week.

On that program one observed thought being given to finding oil with less expenditure of money on exploration, as reflected in the paper presented by Parker D. Trask of the United States Geological Survey.

Considerable loss of production and often unnecessary replacement of production equipment, including pumps, has been occasioned through lack of understanding the importance of proper selection of oil well screen.

In line with the trend of petroleum engineers to contribute papers at technical gatherings that will have a practical application to current operating problems, B. M. Maroney and F. R. Wheeler of Oklahoma gave the A.P.I. in Chicago last week something which could be applied "back home" on the lease in their paper on Oklahoma City field pumping problems.

Students of reservoir conditions and or gas-oil ratios are making worthwhile contributions to modern technique. R. J. Sullivan of the Carter Oil Company has delved into gas-oil ratio control in flowing wells quite deeply. His observations on the subject are worth listening to. Some of them are presented in this issue.

Said by some to be the culmination of efforts of the American Petroleum Institute's sub-committee in California on multi-cylinder gas engine maintenance, H. R. Hogaboom has done and is doing some very constructive work.

Oil in the Courts

Government finishes case at Madison and defense to spend month denying charges . . . Pennsylvania court rules oil land owner is responsible for tax payment.

THE trial of oil companies at Madison on charges of anti-trust law violations now promises to reach conclusion before Christmas, whereas it had appeared previously that the trial might last considerably longer.

Last week was eventful at the Madison trial. The government concluded its case, and made way for the defense to deny the charges. The defense indicated it will require about 4 or 5 weeks for its presentation. Meanwhile, charges were dismissed against a group of the defendants.

A court in Pennsylvania last week ruled that a land owner must pay taxes assessed on crude oil production from his land. The owner had contended that he retained only the ⅛ royalty and that others owned the other ⅞. But the ruling was that in absence of a contract to the contrary, taxes are payable by the land owner—by the lessor, not lessee. The case will go to the supreme court of the state.

Arguments were opened last week at Fresno, California, in the government's suit for possession of Elk Hill oil lands, after Standard Oil Company of California rested its case.

Charges against group in Madison trial dismissed

Conspiracy charges against 8 defendants in the government's prosecution of major oil companies, officials, and trade journals, which opened in federal court at Madison six weeks ago, were dismissed last week as the government completed presentation of its evidence. Dismissal motion was made by government attorneys, who cited "insufficient evidence" among reasons for dropping the charges.

Formal completion of the government's presentation paved way for defense motions to strike and for a directed verdict, which defense counsel announced would be ready Monday.

Oil Code Brought Up Again

Just before the government rested its case last Friday morning, W. J. Donovan, chief of defense counsel, made another effort to have the NRA code of fair competition for the petroleum industry and the President's executive order admitted as evidence. He pointed out that during the course of government presentation, references were made to "allocations" and the planning and coordination committee established under the oil code, and that the alleged uniform jobbers contracts relate to the code.

Government attorneys renewed objections made when defense counsel sought earlier in the trial to have the code admitted,

"I have no desire to reargue the question now," Donovan told the court. "I merely want to point out that the code is necessary because of evidence introduced by the government." He explained that a St. Louis meeting of major company representatives early in the period covered by the indictment and which the government charges was the beginning of a conspiracy was described by a government witness as a market stabilization meeting, called by code officials.

The court refused to grant the defense motion, but declared he would take "judicial notice" of the code when considering the defense plea for a directed verdict.

Government Drops Charges

Near conclusion of their presentation late Thursday afternoon, government counsel presented a motion to dismiss charges against two major oil companies, two subsidiaries, three trade journals, and one individual.

The motion was granted by Federal Judge Patrick T. Stone, over objection of individual counsel for several of the companies concerned, who sought a directed jury verdict for their clients. The motion was presented by Hammond E. Chaffetz of government counsel, who detailed the government's reason for making the motion in connection with each defendant.

Charges against the following were dismissed:

Tide Water Associated Oil Company, because evidence shows that acts charged in the indictment were committed by Tide Water Oil Company, since dissolved, and it "appears" that Associated Oil Company was "not legally liable."

Deep Rock Oil Corporation, because assets of the corporation are in hands of receiver named by a federal court and therefore the company cannot be legally prosecuted.

Louisiana Oil Refining Corporation (controlled by Cities Service), because the company has been dissolved.

Cities Service Export Oil Company (Cities Service), because it merged with "certain other companies in June, 1936, before the return of the indictment."

Journal of Commerce Publishing Company, publisher of the Chicago Journal of Commerce; W. C. Platt Company, publisher of Platt's Oilgram; National Petroleum Publishing Company, publisher of National Petroleum News, and Warren C. Platt, president of the latter two companies, because evidence was "not sufficient to support indictment."

Attorneys for Tide Water and the trade journals entered objections to the dismissal motion, declaring their clients were entitled to directed verdict of innocent. As an alternative, they sought to remain on trial, pointing out that the dismissal motion was not presented until the government had spent six weeks in attemping to prove their clients guilty; and for that reason, if no other, their clients should be given the opportunity to gain a jury verdict of innocent, either directed or otherwise.

"If these defendants want to stay in the case, we have no objection," Chaffez told the court, refusing to join in a suggested defense motion for a directed verdict.

The court overruled the defense objection, granting the government's motion, and cleared the air with: "It seems to me, gentlemen, that after six weeks you are so in the habit of entering objections that it's hard to get over it."

May End Before Christmas

Announcement that government attorneys were about to complete presentation of their case was the most encouraging news as the past week began; and hope was given that the trial might be brought to a close before Christmas.

Defense attorneys believe they can complete their presentation in five or six weeks.

Government attorneys, bringing their case to a close, sought to link indicted officials of Phillips Petroleum Company, Mid-Continent Petroleum Corporation, Continental Oil Company, Skelly Oil Company, Pure Oil Company, Cities Service Company, and Standard Oil Company of Indiana to previous testimony. Very few references were made in the prosecution's examination of its witnesses during the week to the alleged buying program in which the companies and many of their officers are charged with participating in an effort to raise spot tank car market prices in the East Texas and Mid-Continent fields.

Court rules owner must pay taxes on oil land

The owner of oil and gas lands, and not the leaseholder, must pay taxes on the land, in the absence of any agreement to the contrary, Judge Lee A. McCracken ruled in Franklin, Pennsylvania, last week. The decision, of vital importance to the state's oil industry, is to be appealed to the Pennsylvania supreme court.

The decision was rendered in a case brought by W. L. Baird, land owner, against County Commissioners Fred Gates, Walter E. Cubbon and J. Frank Horner. The action was brought as an appeal when the commissioners, sitting as a board of tax revision, refused to lower the tax assessment on property owned by Baird.

The petitioner declared he was the owner of a one-eighth interest in oil and gas underlying the premises and that the oil has been assessed at $3,520 for the years 1937, 1938, and 1939, on the basis of a daily production of seven

[*Continued on page 62*]

Markets Are Disturbed

Weakness of gasoline situation threatens to extend to rest of industry's markets . . . Lowering of crude output urged . . . Texas to cut allowables.

SOME serious concern over the industry's market situation has arisen, it was indicated by developments of last week; although price declines so far have been limited largely to the gasoline market.

Crude prices have been holding up, and so have those of fuel oils, kerosene and other products except gasoline. The tank car prices of gasoline at refineries have declined materially in the past six weeks, and service station postings have been reduced in various areas in the past two weeks.

Talk has increased regarding the possibility of crude price reductions, as refiners have asserted that lower gasoline prices demand that they be able to buy crude at proportionately lower prices.

A member of the Texas Railroad Commission last week advocated immediate reduction of national crude production 175,000 barrels daily, and the commission announced it would cut the Texas allowable 70,000 barrels a day November 16 as its part in the proposed curtailment. This Texas cut will be in the nature of an emergency move, as the state's allowables normally are changed only at the beginning of each month.

Governor E. W. Marland of Oklahoma warned crude purchasers that a cut in the price of crude oil would result in an increase in the gross production tax in that state.

Michigan state officials delayed sale of leases on state-owned lands because of the unsettled condition of the markets of the industry in that state, fearing that new drilling might burden an already disturbed market. Crude prices in Michigan have been holding lately, although they were reduced some months ago.

National production curtailment urged

Further reduction in crude oil output by 175,000 barrels daily for Oklahoma, Kansas, Texas and New Mexico was proposed by Colonel E. O. Thompson, member of the Texas Railroad Commission, while he was attending the American Petroleum Institute meeting on November 9.

"There is more crude than demand," Thompson asserted. "It is known that when crude oil is stored above ground it causes waste, which can be avoided. We are charged with the prevention of waste. This oil can be produced later when it is needed."

Following the suggestion from Thompson that the United States crude production should be cut 175,000 barrels daily, C. V. Terrell, chairman of the Texas Railroad Commission, announced from Austin that Texas would curtail its output 70,000 barrels per day, effective November 16.

Texas produces 40 percent of the nation's daily production, and this cut constitutes that proportion of the proposed reduction.

It was anticipated that other states would consider the planned reduction with favor, although none of the conservation authorities have made any statement. It will be necessary that meetings be held by the various state proration agencies before anything definite can be done.

That national output has been in excess of current demand was one of the off-program subjects at the American Petroleum Institute meeting. The majority favored a reduction, but all were not in accord. Charles Roeser, Fort Worth, president of the Independent Petroleum Association of America, said 175,000 barrels was too much. Jack Vickers, Wichita, Kansas, independent operator, declared the situation in Kansas did not demand such drastic action.

Michigan officials delay sale of state land leases

Unprecedented action was taken last week by the Michigan Conservation Department in delaying for at least a month a scheduled sale of 10,750 acres of leases on state owned land, due to "the unsettled condition prevailing in the Michigan petroleum industry."

Both State Geologist R. A. Smith and Commissioner Harry A. Whitley warned the commission that "crude oil marketing conditons are precarious to the degree that the market structure may collapse." As far as the state is concerned, Commissioner Whitley said, "it would be better conservation to forestall development than glut the already saturated market."

The action followed a series of conferences by the department with officials of state pipe line and refining companies.

Although all of the leases which had been scheduled to be placed up for auction are listed as wildcat, the commission pointed out that Buckeye township in Gladwin County likewise was recognized as wildcat less than a year ago, but that it is today a major producing area.

There are 259,984 acres of state owned land under lease for oil prospecting in Michigan today. There are 120 commercial oil and gas wells on state leases, which produced 1,305,000 barrels of oil the first eight months of this year.

Michigan does not have a state oil control act. Operators viewed the state's action as a potent move to curtail if not sidetrack operations. Thousands of acres of land in northern Michigan, into which exploration trends have been reaching stronger than ever before during the past six months, are owned by the state. Developments of small and scattered privately owned lease blocks probably would not be undertaken if state leases were held out.

State Geologist Smith, at the same time, told the commission that independent operators who recently appealed to the state in protest of the 15-cent per barrel crude price cut "may best appeal to the interstate commerce commission." In a preliminary survey, he said, no direct evidence of discrimination was found as the cause of the price slash.

Engineering curricula accredited by council

For the first time in the history of engineering education in the United States, engineering curricula throughout the country has been appraised by a representative body of engineers, and a single accredited list has been published of courses of study deemed worthy of approval. The accrediting process has been carried out during the past two years by the Engineers' Council for Professional Development, a joint organization created by seven national engineering societies for the purpose of enhancing the status of the engineering profession. The participating groups are: American Society of Civil Engineers; the American Society of Mechanical Engineers; American Institute of Electrical Engineers; American Institute of Mining and Metallurgical Engineers; American Institute of Chemical Engineers; the Society for the Promotion of Engineering Education; and National Council of State Boards of Engineering Examiners.

Working through four committees, the council inaugurated a program dealing with the selection, guidance, training, and recognition of members of the engineering profession. The objective of the committee on engineering schools was to "formulate criteria for colleges of engineering, which will insure to their graduates a sound educational background for practising the engineering profession," and to give recognition to those institutions prepared to teach engineering according to acceptable standards.

The following schools were given accredited ratings in petroleum engineering: University of California; Colorado School of Mines; Louisiana State University; University of Minnesota; University of Oklahoma (production option); University of Pittsburgh (petroleum engineering and petroleum refining); University of Southern California; Stanford University; University of Texas (petroleum production engineering); and A. & M. College of Texas.

Many schools were given accredited ratings in mechanical engineering, mining engineering, electrical engineering, chemical engineering and other engineering courses of interest to the oil industry.

Requests for further information regarding the Engineers' Council for Professional Development, and the accrediting program may be addressed to A. B. Parsons, secretary, 29 West 39th Street, New York City.

Proration Matters

Terrell orders 70,000-barrel cut in Texas allowable. Louisiana studies total displacement proration. Oklahoma City volume and pressures off.

A CUT of 70,000 barrels daily in the Texas allowable, effective November 16, was announced last week by C. V. Terrell, chairman of the Texas Railroad Commission. The new cut was ordered to bring Texas demand within the market, and should mean an allowable of approximately 1,320,000 barrels daily.

Cuts ordered by the commission during the past two months have been effected by making a flat reduction of a certain percentage of the proratable oil, that is, that portion of the allowable over and above the marginal allowance assigned to Texas wells. If this procedure is followed next week, the commission will probably cut about 20 percent of the probable oil from all the flush fields in the state outside of East Texas.

In a prepared statement issued at the time the announcement was made, Commissioner Terrell said:

"It appears that the production of crude oil in the United States is 175,000 barrels a day in excess of the firm current demand.

"It is, and has been, the policy of the Texas Railroad Commission to cooperate with the other states belonging to the Oil States Compact in keeping the allowable within the market demand.

"The Texas commission is fixed in its program of holding the Texas allowable to the market demand as a policy of conservation. During the winter months the need for gasoline naturally decreases and it is proper that the oil industry and the public generally should know both the conditions and our policy in advance, that they may be better able to meet the changed situation as it approaches."

Statewide Hearing

The statewide hearing to which Terrell refers is expected to develop no unusual features of consequence. The condition of the East Texas field will be brought down to date, especially with relation to declining pressures. During this month the commission has continued its potential tests of wells along the edges of the field to determine whether the tests made last month are an accurate reflection of the general condition, that is, whether wells within that part of the field have uniformly low allowables and are unlikely able to produce the 20-barrel minimum marginal allowance which has been assigned to them in the past.

Another feature of the hearing will be the discussion involving metering of all oil produced in Texas, a plan which has been advocated at the past two hearings by Clarence E. Farmer, state representative from Fort Worth.

V. E. Cottingham, director of production for the Railroad Commission, has sent out a questionnaire to all operators, asking them about their experience with metering oil and seeking to determine which type of meter is preferred for this work.

At the statewide hearing last month operators filed with the commission nominations to purchase 1,623,979 barrels of crude oil during the month of December, which was 8685 barrels in excess of November nominations.

Hearing held on problems in Louisiana's Rodessa

William G. Rankin, Louisiana conservation commissioner, held a hearing in Shreveport November 8 on volumetric withdrawals of oil, gas and water; gas/oil ratios; separation of producing sands; and other problems having to do with proration of wells on the Louisiana side of Rodessa.

The main topic was the feasibility and desirability of prorating by the total displacement method, that is, assigning each well a volumetric quota, whether it be oil, gas or water. At present wells are prorated there 50 percent on acreage and 50 percent on bottom hole pressure, for oil wells and gas-distillate wells are classed as gas wells.

Rankin gave operators five days in which to file rebuttal briefs, following the hearing, and indicated that as soon as all the data are in hand a decision will be made.

The formal hearing followed an informal hearing requested by operators several days before.

Lower Gas Allowables Argued

Representatives of Standard Oil Company of Louisiana, Phillips Petroleum Company and Union Producing Company at the November 8 hearing expressed themselves as in favor of a reduction in gas allowable for gas wells to such degree that the volumetric allowable would be more than the volumetric withdrawals of oil and gas from oil wells.

Representatives of Arkansas-Louisiana Gas Company (Cities Service), most of whose Rodessa wells are gassers, opposed any change in the present method of setting allowables.

The question of whether water drive or gas drive is the more efficient came in for considerable discussion. Also discussed was whether the reduction of gas production from gas wells would not result in gas traveling down structure, increasing gas/oil ratios, and channeling to cut off oil from wells.

J. E. Bailey, engineer for Tide Water Associated Oil Company, said that from the experience of his company in the field, he saw no reason to change the present method of making allowables. However, if the gas allowable is reduced, he recommended the maximum gas/oil ratio of 2000 to 1 be increased to 5000 to 1.

J. R. McWilliams, vice president of Standard Oil Company of Louisiana, represented that company; P. C. Murphy, division superintendent, represented Phillips Petroleum Company; T. W. Johnson, petroleum engineer, represented Union Producing Company; E. L. Caster, head of the land and geological department, and R. O. Garrett, petroleum engineer, represented Arkansas-Louisiana Gas Company.

Present Order Upheld

C. N. Black, division superintendent, Magnolia Petroleum Company, told the commissioner he believed the present order, if properly observed, will be sufficient. M. H. Marr, independent, favored an increased gas/oil ratio and favored gas wells being restricted to volumetric withdrawals not exceeding that of oil wells.

C. P. Porter of Blackwell Oil & Gas Company, asked that the area in the northeast part of the field producing from the stray Neugent sand not be included in the order, as it is separated structurally from the rest of the field.

At El Dorado, Arkansas, on Friday, November 12, the Arkansas Board of Conservation held a second hearing on allowables for the Miller County end of Rodessa. The board had held in abeyance until November 16 its recently promulgated order limiting allowables in Miller County to 10,000 barrels, pending a second hearing.

On November 5 the Arkansas Board of Conservation held a hearing on rules and regulations for the drilling and spacing of deep wells at Schuler in the lower Marine and Permian horizons. Rules recommended to the board and taken under advisement were to the effect that no proration is needed at present for the new deeper horizons below 7000 feet. The recommendations were signed by operators owning nearly all of the Schuler acreage.

Gas pressure and volume in Oklahoma City decline

Dropping off of gas pressures and volume in the Oklahoma City field was well illustrated in the recently issued report of the Oklahoma Corporation Commission covering the September-October test period.

The 120 wells tested, four less than during the May and June test, showed a total potential of 542,496,000 cubic feet of gas, a drop of 258,701,000 cubic feet below the total of 801,197,000 cubic feet during the first test for the year.

Potential tests planned

According to an announcement by E. G. Dahlgren, director of the conservation division, Kansas Corporation Commission, potential tests will be started in the following pools on or about November 15: Atherton, South Atherton, Neidenthal, Big Creek, Harbaugh, Vaughn, Billings, Gurney, South Gurney, Michel, Williamson, Letsch and Bunker Hill. All of the pools are located in Russell County.

Hope Justified Despite Uncertainties

Industry is in favorable position for going through indicated temporary business lull, and it probably could do well even if recession proves more serious.

By L. J. LOGAN,
Associate Editor

DESPITE present world-wide anxiety over the general business outlook, and despite the fact that the cloud of doubt has spread over the oil business as well as other enterprises, various circumstances offer hope regarding the future of the petroleum industry.

Prominent among these circumstances are the following:

1. There appears to be a growing acceptance of the opinion that the present disturbance of business will prove only a temporary recession, rather than a major depression.

2. Being in an exceptionally sound position, with demand for petroleum products running at record levels, with inventories relatively light, and with current operations under effective control, the oil industry gives promise of showing profitable results at least well into 1938, if not longer.

Men who probably are best qualified for discerning what the future holds are coming into fairly general agreement that the present trade lull has the earmarks of a temporary let-down, rather than those of an incipient major depression.

Numerous economists, business leaders, and government officials have expressed the opinion that the present weak stock market and reduced business activity portend only a minor reaction, and that business again will flourish, following the set-back, before the recovery phase of the business cycle is completed.

Men expressing this or a similar opinion lately have included: Alfred P. Sloan, Jr., chairman of General Motors Corporation; William S. Knudsen, president of the same corporation; General Charles G. Dawes, banker and former Vice President of the United States; Roger W. Babson, economist; Jesse H. Jones, chairman of the Reconstruction Finance Corporation; Lewis H. Brown, president of Johns-Manville Corporation; Sir John Simon, British Chancellor of the Exchequer; and others.

It appears to be rather commonly believed by these men that the basic trend will be upward at least 2 or 3 more years.

Favorable Factors Cited

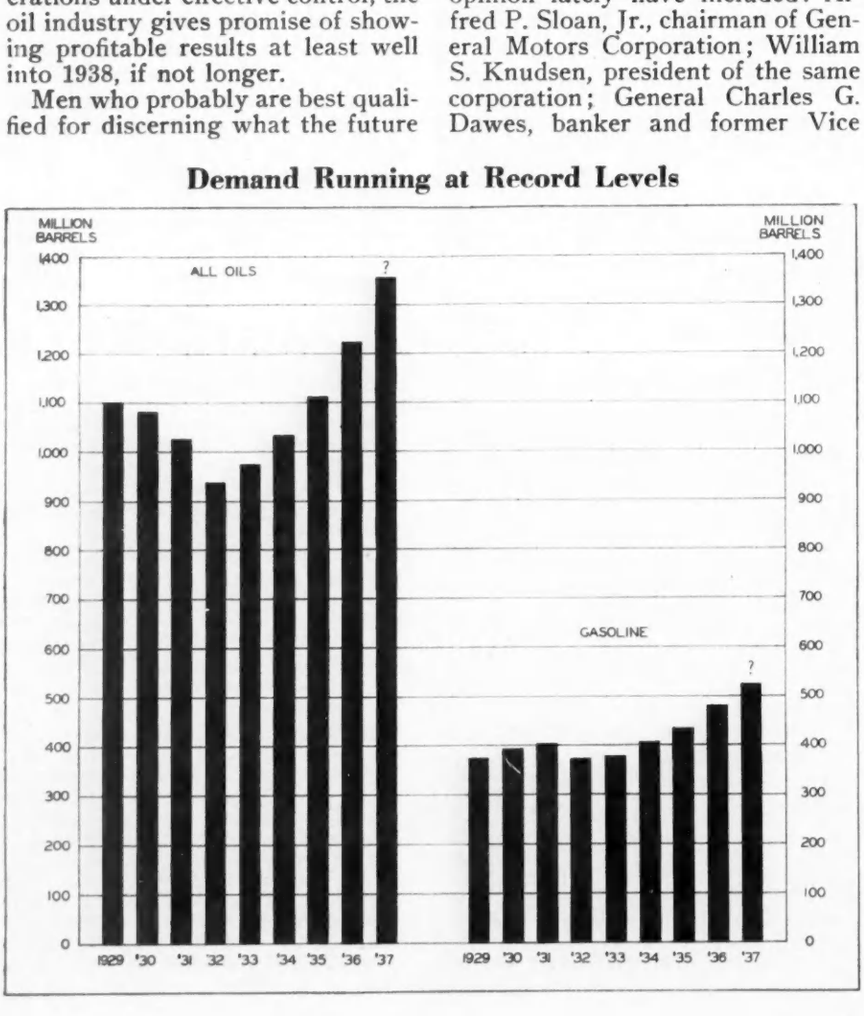
Favorable factors that are cited as indication that the present trade lull will prove temporary include these: business debts are relatively small, credit is cheap and plentiful, banking resources are not strained, no building boom exists, there has not been violent speculation such as generally marks the end of a business boom.

In considering the probable duration of the present supposedly temporary recession, it generally is conceded that the lull probably will extend into 1938, and that it may cause 1938 results to be somewhat less favorable generally than those of 1937. One economist has predicted that 1938 business would be about 10 percent smaller than that of 1937. Less specific, economists of the Bureau of Agricultural Economics at Washington have predicted that national income in 1938 will be less than the estimated $69,000,000 for 1937, basing the forecast in part on the prospect of lower prices and buying power of farm products and in part on the expectation of a curtailment of government spending, which hitherto has stimulated business. Meanwhile, men venturing to predict in terms of more definite time limits are expressing the opinion that business will begin to show improvement around the early part of spring.

Oil Demand Stable

If these optimistic opinions should be confirmed by actual developments, the oil industry possibly could go through the indicated trade lull without any material impairment of its volumes of

Demand Running at Record Levels



business. For even in the recent severe depression, the demand for petroleum and petroleum products, particularly gasoline, did not decline materially, as indicated by one of the accompanying charts. And in a minor recession, the worst damage might be only the occurrence of a less sharply rising trend of consumption, rather than an actual decline.

One economist has predicted that gasoline demand in 1938 will be around 5 percent larger than in 1937, whereas 1937 demand has been running about 10 percent above that of 1936. In effect, he predicted a new all time peak of gasoline consumption in 1938, since the 1937 demand will exceed all previous records.

Price Maintenane Promised

Moreover, the industry possibly could go through a minor depression maintaining satisfactory prices, since generally stable markets are fairly well assured for some time by the exceptionally sound conditions in the industry. Prominent among these favorable conditions are: (1) the comparatively light inventories of oils that the industry now has in storage, as indicated by another of the charts presented herewith, and (2) the present and prospective effective control of wells and refineries, in conformity with current market requirements.

Since it is indicated that the industry has a good chance to go through a minor depression maintaining large volumes of business and satisfactory prices, it follows that the industry possibly could hold earnings at good levels, while going through the period.

Hopefulness Justified

Furthermore, even if the business recession should become more serious than the above predictions indicate, developing into a full-fledged depression, the petroleum industry apparently would be in position to show creditable results, possibly excelling those of some other industries, even though it naturally would be handicapped by the reduced general business.

In going through a major depression, the industry would be aided by the same circumstances cited above as advantages for going through a temporary trade lull; namely, the fairly depression-proof nature of the demand for petroleum products, which tends to maintain volumes of business; and the market-stabilizing conditions in the industry, particularly the effective control of current operations and the comparatively light inventories.

Demand Good in Depression

Even in the recent severe depression, the total demand for United States oils declined only 14.9 percent—from the peak that was reached in 1929 to the depression bottom of 1932. In that 3-year period, 1930-1931-1932, when the demand was on the downward trend, the greatest decrease shown in a single year was that of 8.7 percent for 1932 as compared with 1931. The demand for gaoline, chief money crop of the industry, held up even better, showing a decline only in one year, 1932, when requirements were 7.3 percent smaller than in 1931.

As early in the subsequent recovery period as 1935, the total demand for petroleum, as well as that for gasoline, had increased to new record proportions. The new all-time peaks of demand in prospect for 1937 will be far above the 1929 levels.

Inventories Moderate

The accompanying chart on inventories of the industry tells better than words how favorable the stocks situation is. The present inventories of all oils are materially smaller now than those on hand at the end of 1929, in actual barrels; and they are far under the late 1929 supplies in terms of days' supply, at prevailing rates of consumption, since demand has increased greatly in the meantime.

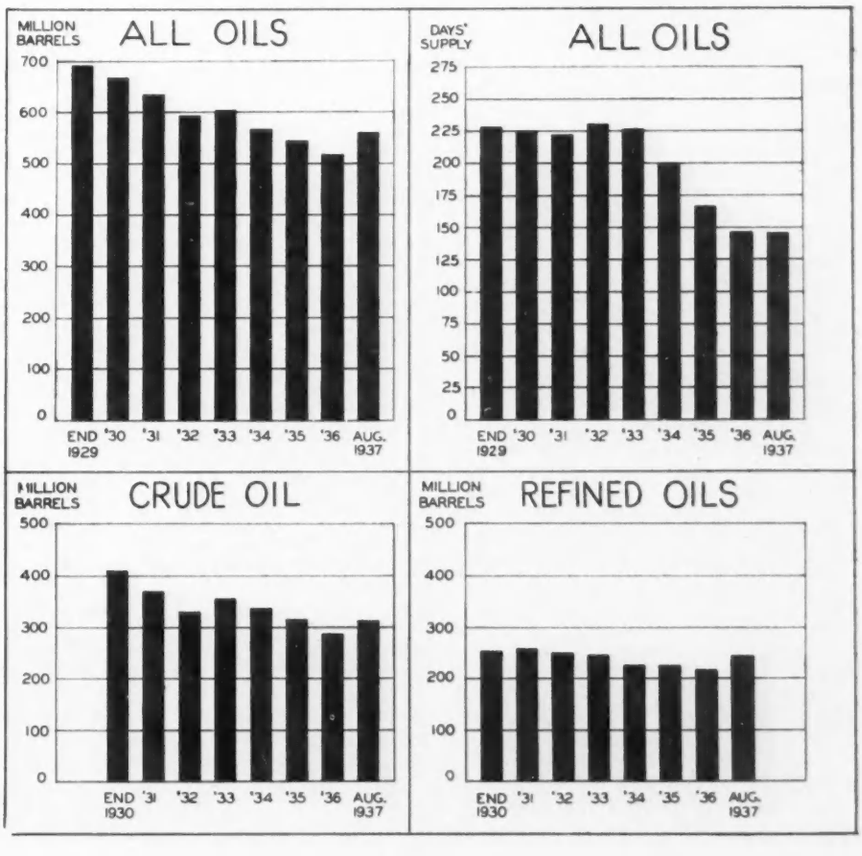
Crude oil stocks, similarly, are smaller now than at the end of 1929, both in actual quantity and in terms of days' supply.

Refined oil stocks have been increased this year, following declines for several years. But they are somewhat smaller than in 1933, 1932, or 1931, in actual quantity, and are materially smaller than in those years, in terms of days' supply.

Crude Control Better

The present control of crude oil production is not perfect, but it is far more successful than that which prevailed when the industry entered the past depression. Proration has been made much more effective, in the meantime. And furthermore, the big East Texas field made crude control doubly difficult in the past depression. No such market-breaking field is on the industry's hands at present.

Present Inventories Relatively Small



Industry Deserves to Be Left Free

Byles points out most difficulty comes from troublesome minority; Hill declares government control has always hampered industry.

By GRADY TRIPLETT, Staff Writer

FOR its first general session of the eighteenth annual meeting of the American Petroleum Institute in Chicago November 8-12, the oil industry was pictured as one whose purposes and accomplishments are such that it deserves to be left free to pursue its way under free enterprise. The second general session was devoted to legislative and tax proposals, with the speakers holding out against them as individuals and pointing out that the industry should make determined efforts to prevent passage of inimical legislation.

The general sessions were confined to two days, while committee meetings, group sessions and conferences gave the convention a span of five days.

All officials were re-elected. Wichita, Kansas, was selected as the place for the mid-year meeting of 1938, May 23, 24 and 25.

The annual meeting of 1938 will be held in Chicago, November 14, 15, 16, 17 and 18.

Byles and Hill Speak

Axtell J. Byles, president, and George A. Hill, Jr., vice president, for the Division of Production, were the speakers, who outlined the position and accomplishments of oil as an industry of free enterprise.

President Byles based his contention that oil deserves the privilege of going ahead as private enterprise because: "This industry, in good times and in bad, has not only met every public obligation without asking for financial aid from the taxpayer, but is, upon the other hand, contributing to the support of government in the form of taxes upon its properties, products and operations at the staggering rate of $1,181,000,000 per annum."

He pointed out that the public should be appreciative of these services and would be if it understood them. After dealing with the economics of the industry and its ability to deliver its merchandise at low prices, he made this observation as to price fluctuations:

"The market for petroleum products goes up or down as that for other commodities, being affected by general and local conditions, but most of all being affected by the law of supply and demand."

Minority Causing Trouble

The industry's ability to pay high wages completed his picture of what is done in keeping with the accepted standards of an industry doing its duty under free enterprise. With all that, however, he observed:

"Current events, however, indicate that a small minority who, for one reason or another, is unsuccessful or dissatisfied, has turned not only upon its suppliers but is appealing to the government for laws or regulations which they believe will improve their situation.

"It is noteworthy that suggestions for governmental regulation do not come from the consumers of petroleum products and, in view of the prices they are paying and the service rendered, this is understandable."

After mentioning the several congressional investigations the industry has faced, Byles voiced the opinion that the industry may expect similar investigations by state authorities. He advised the industry to be ready for these, saying:

"It has nothing to conceal and may get a substantial return through this means of informing the public, as well as the state authorities, of the operations of this business, concerning which the public is too little informed and far too much misinformed."

He tied the welfare of the industry with that of all industry, and observed:

"We know that our progress so far has been achieved under a free economy, which has encouraged individual initiative, protected human liberty and respected private property. This is the capitalistic system as distinguished from the totalitarian or socialized state, wherein a government decides what must be done by the citizens and with their lives and property."

Hill Summarizes Industry

The address by George A. Hill, Jr., vice president for the Division of Production, consisted of an extensive summary of these phases of the petroleum industry: Consumption, reserves, potential producing capacity, conservation, balance between supply and demand, limitations on rule of capture, well spacing, labor, drilling and production advances, advances in exploration and discovery, advances in refining processes, retail marketing, transportation, taxation, effect on the public, limitations on foreign trade, foreign operations, government competition in foreign trade, and oil as a military necessity. He gave these conclusions:

"Private capital, individual initiative and free enterprise have achieved the highest degree of development in exploration, exploitation and in the advancement of each of the associated sciences involved in petroleum technological progress. This has resulted in cheaper prices to the consuming public in the United States.

"Helpful functions of government in regulation and in aid of petroleum industrial progress are recognized in the promotion of conservation, in the prevention of physical and economic waste and in the scientific ascertainment of consumptive demand.

Lauds Private Enterprise

"In the foreign field associated private enterprise has extended the field of American industrial power and prestige with substantial benefits to the American government and without involving the United States government as such.

"Government control, whether effectuated through government monopoly, governmental expropriation, import and export regulation, or through the nationalization of petroleum and other national resources, has hampered, obstructed and restricted petroleum industrial development as compared with or measured by the achievement of private capital, private initiative and private management.

"Foreign exploration, production and refining of petroleum have been dependent to the greatest extent upon the advances made by the petroleum industry in America in the production and refining technology and in the improvements made in the art of oil finding, and in American manufactured equipment and supplies. No major development that has resulted from a purely governmental controlled branch of the industry in any foreign country has been able to keep abreast of the progress made in the industry by private capital and enterprise.

"National defense and national welfare are best promoted and served by the extensive and efficient development of petroleum (an essential and indispensable weapon of national defense) through the media of private capital, initiative and management in a free competitive system, susceptible of quick mobilization for emergent national service."

Collett on Legislation

In his address on "Legislation As It Affects the Oil Industry," J. D. Collett, Fort Worth, placed the proposal to change or eliminate the depletion allowance as the most obnoxious under consideration. "It is undeniable," he asserted, "that the extraction of petroleum or of any other mineral is in its very nature a process of depletion. On no sound basis could the proceeds of such a process be regarded as income pure and simple, in the sense that the return on capital invested in any other kind of enterprise is income." In its defense he mentioned again: "The per-

And Should Fight Inimical Legislation

centage allowance has worked well. It has been fair and equitable to all, to the government first of all and to the big and little operator alike. The older methods were especially unfair to the small operator and I do not hesitate to say that anything that works against the small operator is against the best interests of the entire industry."

As to what should be done concerning the effort to change the depletion allowance as well as other harmful legislative proposals, Collett put the remedy up to the industry with:

"There has been too much timidity on the part of the oil men the country over in the matter of contacting their own lawmakers. Senator Barkley, the new leader in the senate, recently declared, 'I do not know of an officer of the government who would not gladly receive the honest opinion of any man in business.' I think that oil men generally should act on this assumption and that they should not fear criticism that such a course constitutes an interference on the part of business with legislation.'

"It is time for us to quit feeling sorry for ourselves and for us to get busy individually as well as collectively. Make a public relations man of every employee on your payroll, or at least make an honest and consistent effort to accomplish it."

Other legislation, either existing or proposed, which Collett classed as harmful to industry was: the tax on undistributed profits, the Wages and

[*See General Sessions, page 62*]

Byles re-elected for fourth term as head of American Petroleum Institute; five additional members appointed for Division of Production.

AXTELL J. Byles of New York was elected to serve a fourth term as president of the American Petroleum Institute, at the eighteenth annual meeting in Chicago, November 11.

Reelected also, at a meeting of the board of directors, were the following officers and members of the executive committee shown on the tables at the bottom of this page.

D. E. Buchanan, of Hanlon-Buchanan, Inc., Tulsa, was reelected chairman of the membership committee. Members are: R. A. Broomfield, Barnsdall Oil Company, Los Angeles; E. J. Bullock, Standard Oil Company (Indiana), Chicago; W. H. Ferguson, Continental Oil Company, Denver; and C. P. McGaha, Fain and McGaha, Wichita Falls.

Members of the American Petroleum Industries Committee were reelected as follows: H. T. Klein, The Texas Company, New York; J. J. Cosgrove, Continental Oil Company, Ponca City; P. M. Gregg, Union Oil Company of California; Los Angeles; W. J. Guthrie, Gulf Refining Company, Pittsburgh; E. S. Hall, Standard Oil Company (New Jersey), New York; W. A. McAfee, Standard Oil Company (Ohio), Cleveland; G. V. Holton, Socony-Vacuum Oil Company, Inc., New York; and R. T. Osborn, Sinclair Refining Company, New York.

Six new members were elected to membership on the board of directors yesterday, and 46 members were reelected. The membership of the board was increased to 108 with the addition of one member to the at-large group, elected by the board itself, but action was taken looking to establishing a definite limitation upon membership hereafter. A special committee, to be appointed by President Axtell J. Byles, will file recommendations shortly.

Charles P. McGaha of Fain & McGaha, Wichita Falls, Texas, who is also president of the Texas Division, Mid-Continent Oil & Gas Association, was elected by the board itself to the at-

A. P. I. Officials Elected at Chicago

OFFICERS

Axtell J. Byles
President

George A. Hill, Jr.
Vice President (Production)

O. D. Donnell
Treasurer

W. R. Boyd, Jr.
Executive Vice President

W. S. S. Rodgers
Vice President (Refining)

Lacey Walker
Secretary and Assistant Treasurer

K. R. Kingsbury
Vice President at Large

C. E. Arnott
Vice President (Marketing)

J. S. Cooke
Assistant Secretary

EXECUTIVE COMMITTEE

F. A. Leovy
Gulf Oil Corporation

E. G. Seubert
Standard Oil Company (Indiana)

W. C. Teagle
Standard Oil Company (New Jersey)

J. Howard Pew
Sun Oil Company

H. F. Sinclair
Consolidated Oil Corporation

R. G. A. Van Der Woude
Shell Union Oil Corporation

large group. The board elected, also as members of the at-large group, W. A. Jones of Cities Service Company, New York, to succeed E. T. Moore of Dallas, Texas, and W. Floyd Clinger of Oil City, Pennsylvania, president of the Pennsylvania Grade Crude Oil Association, to succeed T. B. Thompson, Jr., also of Oil City.

The Board of Councillors nominated for re-election 32 members of the board whose terms expired this year, and nominated 3 new members. The nominees of the Board of Councillors were elected by the membership of the Institute at the first general session of the eighteenth annual meeting, held this afternoon.

Newly Elected

C. S. Jones of Richfield Oil Company, Los Angeles, California, was elected a member of the board to succeed W. C. McDuffie, also of the Richfield Company, in the production group. John M. Crawford of Parkersburg Rig & Reel Company, Parkersburg, West Virginia, was elected member of the board in the supply group to succeed J. A. Geismar of National Supply Company, Toledo, Ohio. H. Wilkinson of Asiatic Petroleum Company, New York, resigned as a member of the at-large group and was elected member in the foreign trade group to succeed Richard Airey of the same company. E. J. Henry of Atlantic Refining Company, Philadelphia, Pennsylvania, was elected member of the at-large group to serve the unexpired term of H. Wilkinson.

The following directors were re-elected:

Production Group: Pacific Coast, S. Belither, Shell Oil Company, San Francisco, California; Rocky Mountain, B. B. Brooks, Consolidated Royalty Oil Company, Casper, Wyoming; Central United States, Burdette Blue, Indian Territory Illuminating Oil Company, Bartlesville, Oklahoma; J. Edgar Pew, Sun Oil Company, Philadelphia, Pennsylvania; Frank Phillips, Phillips Petroleum Company, Bartlesville; Charles F. Roeser, Roeser & Pendleton, Inc., Fort Worth, Texas; Eastern United States: O. D. O'Donnell, The Ohio Oil Company, Findlay, Ohio.

Manufacturing Group

Manufacturing Group: Pacific Coast, R. D. Matthews, Union Oil Company Mountain, T. A. Dines, Salt Creek Producers Association, Denver, Colorado; Central United States, H. R. Straight, Empire Oil & Refining Company, Bartlesville; Eastern United States, Charles L. Suhr, The Penzoil Company, Oil City, Pennsylvania.

Distribution Group: Rocky Mountain, W. H. Ferguson, Continental Oil Company, Denver, Colorado; Central United States, E. G. Seubert, Standard Oil Company (Indiana), Chicago, Illinois; Eastern United States, W. T. Holliday, Standard Oil Company (Ohio), Cleveland, Ohio; Pipe Lines, Douglas S. Bushnell, Northern Group of Pipe Lines, New York, New York; Harry Moreland, Great Lakes Pipe Line Company, Kansas City, Missouri; Tank Cars, L. J. Drake, Union Tank Car Company, Chicago.

Foreign Trade Group: Far East, H. D. Collier, Standard Oil Company of

[*See "Officers" page 62*]

Crawford heads Equipment Suppliers Association

John M. Crawford, president of Parkersburg Rig & Reel Company, Parkersburg, West Virginia, was unanimously elected president of the Petroleum Equipment Suppliers Association, formerly known as the American Equipment Suppliers Association. The election took place at the association anual meeting, which was held October 11 in the Stevens Hotel. He succeeds W. J. Morris, president of The Continental Supply Company, Dallas.

John L. Shakely, vice president of Frick-Reid Supply Corporation, Tulsa, is the new vice president. Wharton Weems, a member of the law firm of Vinson, Elkins, Weems & Francis in Houston, was renamed secretary-treasurer and counsel.

New directors elected at the meeting follow:

Eastern District—Percy C. Jones, J. A. Geismar, F. F. Murray, J. M. Crawford, Donald Mackie and Jerry McJerkins.

Mid-Continent District—W. M. Bovard, J. A. Chapman, D. R. Brown, Earl W. Miller and A. A. Moody.

Southwestern District—W. J. Morris, S. R. Bray, J. T. Crotty, T. T. Word and E. W. Gildart.

California District—F. C. Merritt, E. S. Dulin, D. S. Faulkner, L. H. Keim, E. M. Smith, J. A. Crowder, L. F. Baash and J. C. Axelson.

Suppliers Elect These Men

John M. Crawford, left, and John L. Shakely, were caught in the corridors of the Stevens Hotel as they came from the annual meeting of the Petroleum Equipment Suppliers Association that saw them elected president and vice president, respectively

Wide interest shown by A.P.I. engineers in current operating problems and research; practicable applicability characterizes papers.

By BRAD MILLS, Associate Editor

WIDE interest was shown at the sessions of the Division of production of the American Petroleum Institute at the Eighteenth Annual meeting in Chicago last week. Research studies and production and drilling practices were topics discussed by the speakers. Many of the papers showed that engineers were making much progress in their search for additional knowledge and in overcoming former operating difficulties. At the same time they indicated that present studies are uncovering new research problems that will confront the engineer tomorrow.

Three group sessions and 48 committee meetings were held by the division of production.

Finding Oil at Less Cost

"One Way of Finding Oil More Cheaply," a paper by Parker D. Trask, U.S. Geological Survey, stated that many millions of dollars are spent each year in trying to locate new oil fields, and that adequate knowledge of source beds would materially lessen the cost of finding new pools. Source beds are rocks in the ground that contain the materials generating the oil; hence in drilling for oil it is highly advantageous to know if source beds are present.

The American Petroleum Institute has for more than 10 yeras been supporting a research project whose object has been to develop adequate tests for recognizing these mother substances of petroleum. At present a very promising test has been found. It is called the nitrogen-reduction ratio, being the ratio of the nitrogen content of rocks to the amount of chromic acid the rocks can produce. Rocks having low ratios seem much more likely to be source beds than those with high ratios.

This ratio, however, is not an absolute test of source beds, but as indicated by studies of rocks in Oklahoma and Kansas, it appears to be at least 65 and probably 75 percent efficient. The ratio is being investigated intensively at present to understand more fully its usefulness and limitations. The study as carried out over the past 10 years involves examination and classification of drill cuttings, paleontology having played an important role in this work.

J. S. Surfluh, Standard Oil Company of California, presented a paper on "Prevention of Oil Field Emulsions." The author discussed the sources of emulsions in petroleum, and suggested methods for their prevention. It was stated that emulsions can be reduced or eliminated by: (a) reducing the degree of agitation (which often is caused by leaky pumps); (b) producing physio-chemical conditions unsuitable for emulsion formations; and (c) separating the water from the oil before the agitation takes place. In conclusion it was stated that some operators have effected greater economies.

Screen Openings

A paper by C. J. Coberly, Kobe, Inc., on "Selection of Screen Openings for Unconsolidated Sands," stated that free entrance of oil with the exclusion of sand is the function of screen pipe. To perform this function properly, the screen opening, regardless of type, must bear a definite relation to the grain size of the sand.

Tests under simple, ideal conditions, using spherical grains of one diameter, showed that a stable bridge was established when the width of a rectangular slot was two times the grain size, or when the width of the circular opening was three times the grain size. With openings exceeding these values by about 25 percent, no bridge will be formed.

Angular grains will form a stable bridge under the same conditions as spherical grains. Due to the angularity of the grains, the point at which bridging ceases is extended to openings approximately 50 percent in excess of these values for the samples investigated.

Tests with mixtures containing two sizes show that the bridging influence of the larger grain is great in relation to the amount present. Unconsolidated oil sands with typical grain distribution will form stable bridges if the opening in the screen which retains 10 percent of the sample is taken as the diameter of the "bridging grain" and the rules for uniform spherical grains applied.

The first part of Coberly's paper is presented in full in this issue, beginning on page 39.

Stanley Gill, consulting engineer, Houston, presented written comments that supported the conclusions drawn by Coberly.

Pumping in Oklahoma City

Another paper was "Oklahoma City Field Pumping," by B. M. Moroney, The Carter Oil Company, and F. R. Wheeler, Barnsdall Oil Company. The authors stated that pumping in the Oklahoma City field largely was accomplished by sucker rod-actuated reciprocating pumps, hydraulically operated reciprocating pumps, electrically operated centrifugal pumps, combinations of those mentioned, and various gas lift applications.

Advantages of each were cited, with problems peculiar to these pumping methods discussed. The principal troubles enumerated were sand, rod breaks, paraffin, gas and the sand blast cleaning of tubing for use with the hydraulic pump. In conclusion it was stated that hydraulic and sucker rod pumping complete at low rates of flow, with the centrifugal pump best suited for pumping at high rates. The authors added that there was little difference in the cost per barrel produced by the different methods.

Gas/Oil Ratio Control

"Gas/Oil Ratio Control in Flowing Well," a paper by R. J. Sullivan, The Carter Oil Company, was presented before the group session Friday. It was shown that gas conservation in relation to efficient production of oil is steadily receiving greater practical attention, becoming of more direct interest. Gas/oil ratio control is essentially a problem of coping with free gas and, therefore, of attempting to retain free gas in the reservoir while continuing to extract satisfactory volumes of oil. This demands control of the differential pressures responsible for delivery of oil and gas by the pay formation to the well itself.

Well characteristics referring gas/oil ratio to production rate as a convenient indicator of sub-surface flow pressure were presented from several gas drive pools. Their behavior in the face of gas cap encroachment was discussed and seen to be reflective of pool behavior. In amplifying the central proposition that all methods of contending with high pressure free gas are analyzable in terms of differential flow-pressure adjustment, the uses of fluid-level regulation, tubing design, sub-surface choking, intermittent flow, acid treatment, and mechanical exclusion of gas from the well are taken up.

Studies of well behavior after application of a positive shutoff to the sand face, while illustrating the possibilities of intermittent flow, corroborate conclusions drawn from their open-hole behavior. They also strongly suggest the future contingencies to be considered by preventive methods of radio control.

Part I of Sullivan's paper is presented in full in this issue, beginning on page 28.

B. P. Kantzer and E. G. Trostel, Union Oil Company of California, presented an interesting paper Friday on "Oil Well Performance: A Discussion and Proposed Terminology." It was shown that a compilation of terms used in oil well performance, measurements and calculations had been developed, and discussions explaining and qualifying these terms were included. An attempt has been made to select terms in common use, deviating from them only when so required to avoid confusion. No attempt was made to include terms used in reservoir flow, tubing or annulus flow, or in mechanical lifting methods. A table of the proposed terms, symbols and definitions was appended to the paper.

H. R. Hogaboom, Petroleum Equipment Company, presented a paper on "Operation and Maintenance of Multi-Cylinder Gas Engines." This paper largely presented the recommendations of the California Sub-Committee on Multi-Cylinder Gas Engine Maintenance, and was a summary of detailed discussion held during the past year under the chairmanship of Henry Grinnell. The recommendations could easily be applied to oil field operations.

Control of cooling water temperatures was claimed to be a major item in maintenance — higher temperatures having been recommended. Lubricating

difficulties are minimized by the higher operating temperatures, and oil sludging eliminated, it was shown. Starting difficulties was carefully analyzed, and procedure recommended for locating trouble. Ignition and carburetion demand the bulk of maintenance, it was shown, and detailed procedure for minimizing such trouble outlined. Personnel requirements were briefly discussed and figures presented on operating costs established by experience to date.

The first part of Hogaboom's paper is presented in full in this issue, beginning on page 46.

"Circumferential Field Welding of Casing," a paper by L. R. Hodell, The Carter Oil Company, stated that the principal factors necessary for the successful welding of casing in oil wells were: (1) a readily weldable steel; (2) trained personnel; (3) necessary auxiliary equipment.

By readily weldable steel is meant primarily steels of low carbon content, it was shown. Ordinary A.P.I. grades 'C'" and "D" steels are not considered of this type. A carbon content of 0.35 percent is considered the absolute top limit for steels for casing that is to be welded, the paper stated.

Personnel trained in the welding of casing is practically non-existent, it was shown, but only a reasonable effort is required to educate competent welders in this line of work.

Records indicate industry's accidents decrease in 1937

In presenting the awards for outstanding accident prevention records in 1936, William R. Boyd, Jr., executive vice president, pointed out that both the frequency and the severity of accidents in the petroleum industry showed an increase for 1936, although records for the first part of 1937 show that this trend has been checked. Awards made by the American Petroleum Institute are not the result of any contest but a method of giving recognition to outstanding accomplishments in safety work.

The presentation of certificates was the first business on the program of the first general session of the Eighteenth Annual meeting.

Standard Oil Company of Indiana drew the award in the classification of all departments of the industry.

Five companies shared in the awards for refining, Union Oil Company of California, Standard Oil Company of Louisiana, Magnolia Petroleum Company, American Petroleum Company and General Petroleum Corporation.

There were four awards for wholesale marketing, Continental Oil Company, Standard Oil Company of Indiana, Standard Oil Company of Nebraska and Moreland Oil Corporation, Detroit.

In retail marketing awards went to Cities Service Oil Company, Chicago division, and Standard Oil Company of Nebraska.

For the combination of wholesale and retail marketing awards were made to Houston Oil Company and Magnolia Petroleum Company.

In drilling the awards were to Continental Oil Company, Humble Oil & Refining Company, Chanslor-Canfield Midway Oil Company, Los Angeles.

The awards for production were to Continental Oil Company, Stanolind Oil & Gas Company, Tide Water Associated Oil Company, Chanslor-Canfield Midway Oil Company and Panhandle Refining Company.

Natural gasoline awards went to General Petroleum Corporation and Shell Oil Company.

For oil pipe lines the awards went to Union Oil Company of California, Ajax Pipe Line Company and Houston Oil Company of Texas.

In the gas pipe line division, Oklahoma Natural Gas Company drew the only award.

For safety in marine operations Colonial Beacon Oil Company and The Texas Company drew awards.

Labor Situation

I. T. I. O. workers return to work . . . Pine employes still on strike . . . Mexican firms refuse proposed pay increases.

THE five-day-old strike which shut down the operation of 250 wells in the south city field of the Indian Territory Illuminating Oil Company at Oklahoma City was apparently settled completely early last week strikers followed the request of Governor E. W. Marland of Oklahoma to return to work. After having cast their votes in a mass meeting, 600 employes of the company resumed operation of the wells November 8, after having received assurance that Governor Marland would arrange negotiations seeking settlement of their dispute.

The cause of the strike was the dismissal of 64 union men, who, the strikers claim, were discharged without regard for a contract stipulation that dismissals should be made on the basis of seniority rights. Proposals of John L. Lewis, head of the CIO, and other union officials, calling for resumption of operations, had been rejected by the strikers, who insisted the discharged employes should be reinstated.

The oil company agreed, meanwhile, to confer with an appointed committee and to take up individually the cases of the discharged men. Officials of the firm were confident that the dispute could be settled through contract provisions for arbitration.

Pine Strike Continues

Although various attempts have been made to settle the dispute between W. B. Pine, independent operator of Okmulgee, Oklahoma, and 25 of his employes, workers last week were still picketing the operator's leases in the Seminole district. While on duty one night last week, a group of pickets at Pine's Charparney lease, southeast of Sasakwa, claimed to have seen a burning cross resembling the emblem of the Ku-Klux-Klan organization. The strikers contended that the fiery cross was in full view and that a small group of men had gathered around it.

Oil companies refuse increase

According to recent reports from Mexico City, several foreign oil companies operating in Mexico remained firm in their refusal to accept the suggestion of the Federal Conciliation and Arbitration Board to increase the benefits of oil workers who were on strike during way and June of this year.

Officials of these companies stated that they could not increase the benefits of about $5,500,000 that they already have agreed to grant.

New employe benefit adopted by Magnolia

Dallas. — Twenty-year service employes of Magnolia Petroleum Company and Magnolia Pipe Line Company are to be protected with added survivorship benefits in the event of death prior to retirement or retirement age under a new plan adopted October 21, according to D. A. Little, president.

Survivorship Benefit Plan has been created to pay to an employee's immediate family the sum of twice the annual rate of pay of an employee that has 20 years of service and who participates in the company's existing Annuity and Insurance Plan, which is optional. The latter provides for death insurance and a refund on annuity premiums in the event of death prior to retirement, and will remain intact. The company is to bear the entire cost of the added survivorship benefit.

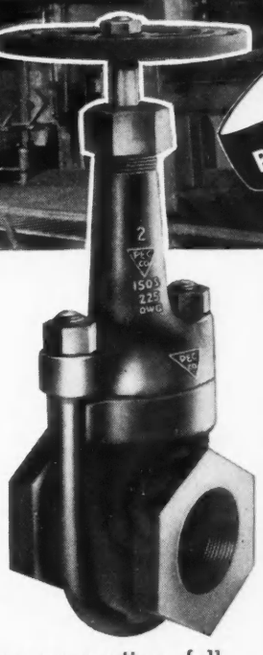
Employes' earnings up

Although the cost of living in the United States has steadily increased, comparative figures show that employes earnings in all phases of industry have increased faster than the necessary expenditures. Wage earners and salaried workers received an average of $1244 each last year, it was estimated; and in selected industries, salaried workers averaged $2334 and wage earners $1142. These figures show substantial increases over 1935, but compare with $1450, $2561 and $1395, respectively, for 1929.

However, judging by the various strikes and labor unrests this year, a great number of workers feel that they have not sufficiently shared in the general prosperity and that perhaps they have gained nothing or little for their striking efforts earlier this year.

Count 'Em!

A BATTERY OF R·P & C CLIP GATE VALVES USED BY A LARGE OIL COMPANY . . .



● The illustration above shows a large battery of Reading-Pratt & Cady Clip Gate Valves as a part of a manifold distribution set-up in the packaging room of a large oil company.

The use of Clip Gate Valves in the manifold in an oil company packaging room is unusual. It is a recognition of the design, materials and precise manufacturing standards of Reading-Pratt & Cady.

This is an economically priced valve, but in the Pratt & Cady design with its round bonnet, full sized wedges completely guided, unusually strong spindle and wedge connection, full bronze trim and follower stuffing box, a standard of performance not usually expected from this type of valve is always obtained.

Where you have a service which requires low initial investment, low maintenance cost and inexpensive replacement, specify Reading-Pratt & Cady Clip Gate Valves.

READING-PRATT & CADY DIVISION
AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT, CONNECTICUT
In Business for Your Safety

BUY ACCO QUALITY

A FEW OF THE 137 AMERICAN CHAIN & CABLE INDUSTRIAL PRODUCTS

AMERICAN CHAIN DIVISION
(DOMINION CHAIN COMPANY, Ltd., in Canada)
Weed Tire Chains • Welded and Weldless Chain • Malleable Castings • Railroad Specialties

AMERICAN CABLE DIVISION
Tru-Lay Preformed Wire Rope • Tru-Loc Processed Fittings • Crescent Brand Wire Rope Tru-Stop Brakes

ANDREW C. CAMPBELL DIVISION
Abrasive Cutting Machines • Floformers Special Machinery • Nibbling Machines

FORD CHAIN BLOCK DIVISION
Chain Hoists • Trolleys

HAZARD WIRE ROPE DIVISION
Green Strand Wire Rope • "Korodless" Wire Rope • Preformed Spring-Lay Wire Rope • Guard Rail Cable

HIGHLAND IRON & STEEL DIVISION
Wrought Iron Bars and Shapes

MANLEY MANUFACTURING DIVISION
Automotive Service Station Equipment

OWEN SILENT SPRING COMPANY, Inc.
Owen Cushion and Mattress Spring Centers

PAGE STEEL AND WIRE DIVISION
Page Fence • Wire and Rod Products Traffic Tape • Welding Wire

READING-PRATT & CADY DIVISION
Valves • Electric Steel Fittings

READING STEEL CASTING DIVISION
Electric Steel Castings, Rough or Machined

WRIGHT MANUFACTURING DIVISION
Chain Hoists • Electric Hoists and Cranes

READING·PRATT & CADY VALVES

ACCO QUALITY VALVES • MADE IN A PLANT DEVOTED EXCLUSIVELY TO MANUFACTURING VALVES

Oil at Conventions

New officers now serve Pacific Coast group of geologists . . . South Texas Geological Society hears papers . . . California natural gasoline men to meet.

W. S. W. KEW, head of the geological department of the Standard Oil Company of California in Southern California, is the new president of the Pacific Section of the American Association of Petroleum Geologists, having been elected at the annual business meeting November 5.

E. Wayne Galliher, chief geologist for Barnsdall Oil Company in California, was elected secretary-treasurer.

The election of officers came near the end of a successful two day session in Los Angeles.

Papers Read

Gerard Henny said that his paper on "Geosynclines, Comprehensive Series and Peneplaines" was not intended to proclaim new ideas. He has been in close relationship with Professors Haug and Termier who first defined the terms, geosyncline and comprehensive series. He said that sometimes these terms are misused by modern geologists and wished to make clear the exact meaning of the words.

F. M. Anderson read a paper on "Synopsis of the Upper Cretaceous Deposits in California and Oregon." He contended that these Upper Cretaceous deposits make up the Chico series. His other thoughts were that it is nowhere found in a single section but on the whole aggregates 25,000 feet or more in thickness. It begins with a great unconformity and overlap in late Albian time, and embraces all succeeding stages known in Europe, probably up to the highest.

Bruce L. Clark read a paper on "Faulting or Folding in the Coast Ranges of California, Which?" The paper dealt largely with the discussion of the structures of the Coalinga area and made a few references to the other areas to the south of that region, as for instance, the area to the north of Santa Ynez Mountains and the Ventura Basin. The purposes of the paper was to discuss the differences in interpretation and in data presented by Reed and Hollister in their book, and those presented by B. L. Clark in his paper covering a portion of the same area. The thesis of the paper was that faulting is the most fundamental structure in the Coast Ranges, and that folding is secondary to faulting.

Australian Possibilities

The paper by A. J. Tieje on "Geology and Oil Prospects of Victoria, Australia" was listened to with special interest. The writer contended that Victoria presents rocks of pre-Cambrian, Eopalcozoic (especially Ordovician), mid-paleozoic, Kamilararoi, Triassic, Jurassic, Tertiary and Quartenary age. Only the Tertiary (upper Pliocene and upper Oligocene (?) offers hope to the oil man. At Lake's Entrance (where interesting mud islands appear and disappear), glauconitis sandstone at about 1400 feet depth carries small quantities of oil, either as an emulsion or by flotation on water. The beds dip southward off the coast on what may be a monocline; 50 miles to the west is barren Baragwanath anticline, striking east and west and plunging east. The area between has not been drilled. The oil derived from lepidocyclinid foraminifera, is very viscous, and yields no gasoline or kerosene fractions. The Austral Oil Company controls the chief area, various phases of geological work are subsidized, and no stock is sold. The Melbourne Street Railway absorbs all products.

G. B. Moody talked about California earthquakes, and effects on buildings were summarized. G. M. Cunningham read a paper on "Seismic Explorations of Difficult Areas," stating that conditions in Calforna are very favorable to this type of exploration; but he discussed more difficult conditions faced in other sections of the country.

George L. Knox described conditions existing in the new McDonald Island Gas field in California, discovered in May, 1936, as the result of reflection seismogrpah survey, carried out the latter part of 1935.

Other subjects discussed by papers were "Review of the Santa Maria Valley Oil Field," by Dean Sheldon, "Notes on the Extent of the Vedder Sand in San Joaquin Valley," by Glen Ferguson, "El Segundo Oil Field, Los Angeles Basin," by R. G. Reese, "Wilmington Oil Field," by Read Winterburn, "Sediments Off the Calfiornia Coast," by Francis P. Shepard and "Geological Significance of the Glauconite Group," by E. Wayne Galliher.

Officers serving the Pacific section the past year included Harry R. Johnson, president; James C. Kimble, secretary-treasurer; district representatives: Harold W. Hoots, A. Arthur Curtice and Homer J. Steiny. During the past meeting Harry R. Johnson presided at the various sessions and Herschel L. Driver was chairman of the program committee.

Geologists hear papers

South Texas Geological Society's most successful annual meeting was held in San Antonio November 5 to 7, inclusive, in which a record number of geologists were present, 199 registrations being reported.

The first day of the meeting was a field trip in which the various Cretaceous outcrops were studied, including contacts from the Taylor to the Glenrose formation. Another field trip on the last day was conducted through the Luling-Branyon district, scene of a present active development campaign.

Papers Presented

Technical papers were presented on November 6. The meeting was opened by Harry Nowlan, president of the society. Following, H. B. Fuqua, of Fort Worth, president of the American Association of Petroleum Geologists, made an address. Travis Peak formation of Central Texas was discussed by Dr. Robert H. Cuyler. William Curry, of San Antonio, gave a sketch of surface geology in the Edwards Plateau showing Cretaceous formations. This was followed by a talk by Oscar R. Champion, of San Antonio, on a subsurface cross section of the Cretaceous formations of South Texas. Leavitt Corning, Jr., another San Antonian, orated on the Igneous activity in the Cretaceous formation of this district. A resume of the Balcones Fault line fields was then given by Joseph M. Dawson. Origin of Cretaceous oils in South Texas was a joint discussion on the part of F. M. Getzendaner, of Uvalde, and Henry McCallum of Bastrop. The final talk was by Fred B. Plummer, of Austin, who discussed the results of acid and shooting of Cretaceous producing horizons.

An informal dinner dance, in which 246 were present, was the climax to the social activities.

Natural Gasoline group to meet in California

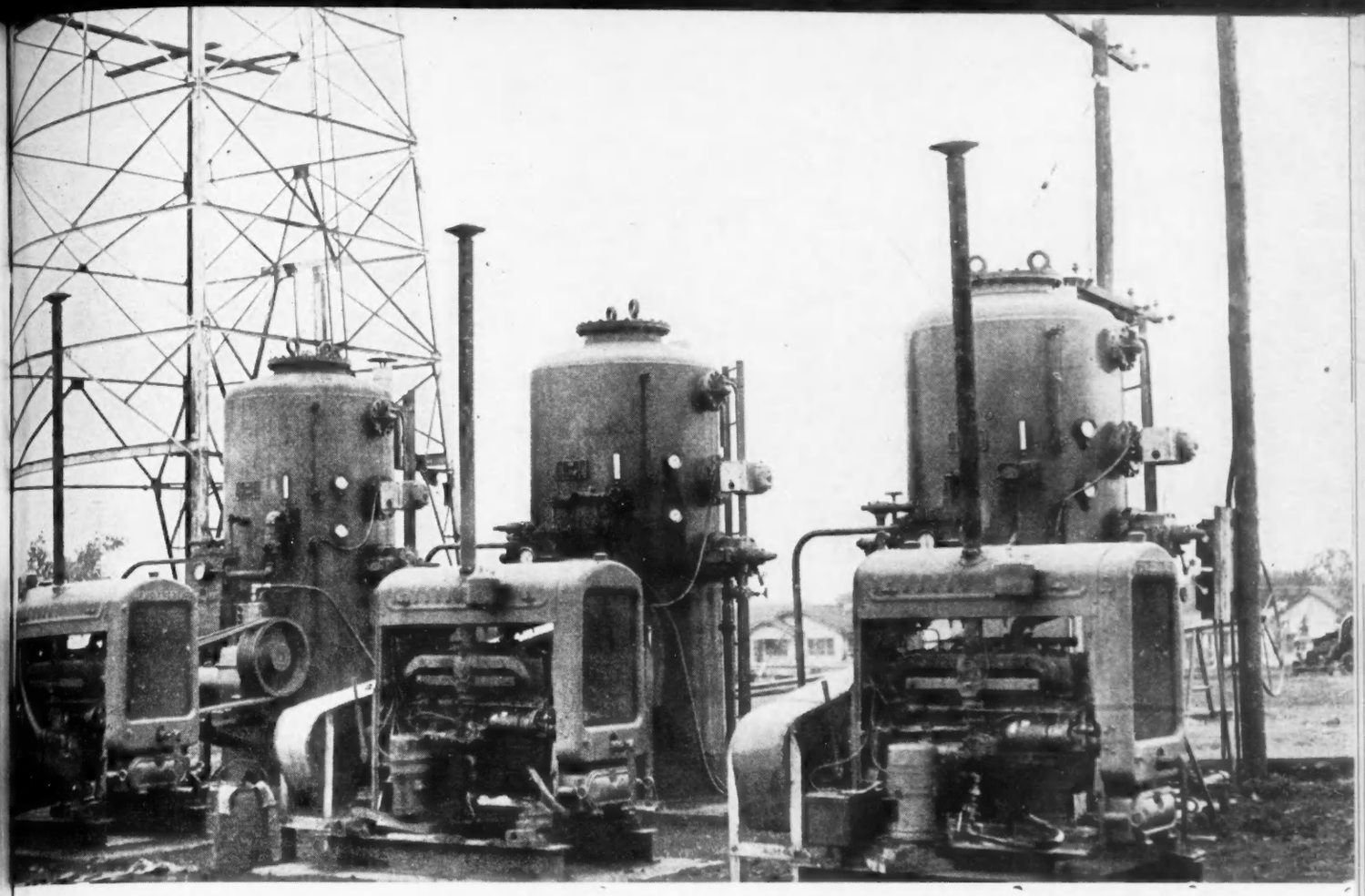
The program of the California Natural Gasoline Association convention, to be held in Los Angeles November 16, was announced last week by P. Douglass Balthis, chairman of the program committee, as follows:

Morning session: "Metering Gasoline by Positive Displacement Methods," by T. R. Beauchamp, The Texas Company; "Truck Gauging," by Warren Kraft, Honolulu Consolidated Oil Company; "Physical Constants," by D. A. Smith, Tide Water Associated Oil Company, and "Liquefied Gas," by C. L. McCartney, Petrolane Corporation.

Afternoon session: "A Discussion of Present Trends and Future Prospects of the Natural Gas Industry in California," by Lester C. Uren, professor of petroleum engineering, University of California; "Polymerization," by Henry Wade, Parkhill-Wade Company.

Mid-Continent Association tax committees to meet

General Chairmen F. B. Plank, Cities Service Oil Company, Bartlesville, and George W. Foster, The Texas Company, Houston ,have announced that the Joint Annual Meeting of the Standing Committee on Federal Income and Excise Taxation and the Standing Committee on State and Local Taxation of the General Mid-Continent Oil & Gas Association, will be held at the Baker Hotel, Dallas, Texas, on Thursday and Friday, December 2 and 3.



Battery of three hydraulic pumping units installed on British American Oil Producing Company's lease in the Mansion area of Oklahoma City pool. Six cylinder engines, fueled with natural gas, drive the pumps by V-belts, supplying the 1¼-inch tubing with crude under pressure of 2000 pounds or more. Oil is from about 6500 feet in the Second Wilcox sand.

HYDRAULIC PRESSURE ACTUATED BOTTOM HOLE

Pumping Unit

ONE OF FIRST IN MID-CONTINENT

By FRANK B. TAYLOR, Staff Writer

FIRMS operating in the Mansion area of Oklahoma City field, faced with the problem of lifting large volumes of fluid from below 6000 feet in Second Wilcox sand, have adapted a variety of production means probably unequaled in any other Mid-Continent field.

Changing conditions from one lease to another, irregular bottom hole factors, and specific requirements have all been instrumental in final choice of equipment. In a number of cases, installations are duplicates of units satisfactorily operated elsewhere under similar conditions.

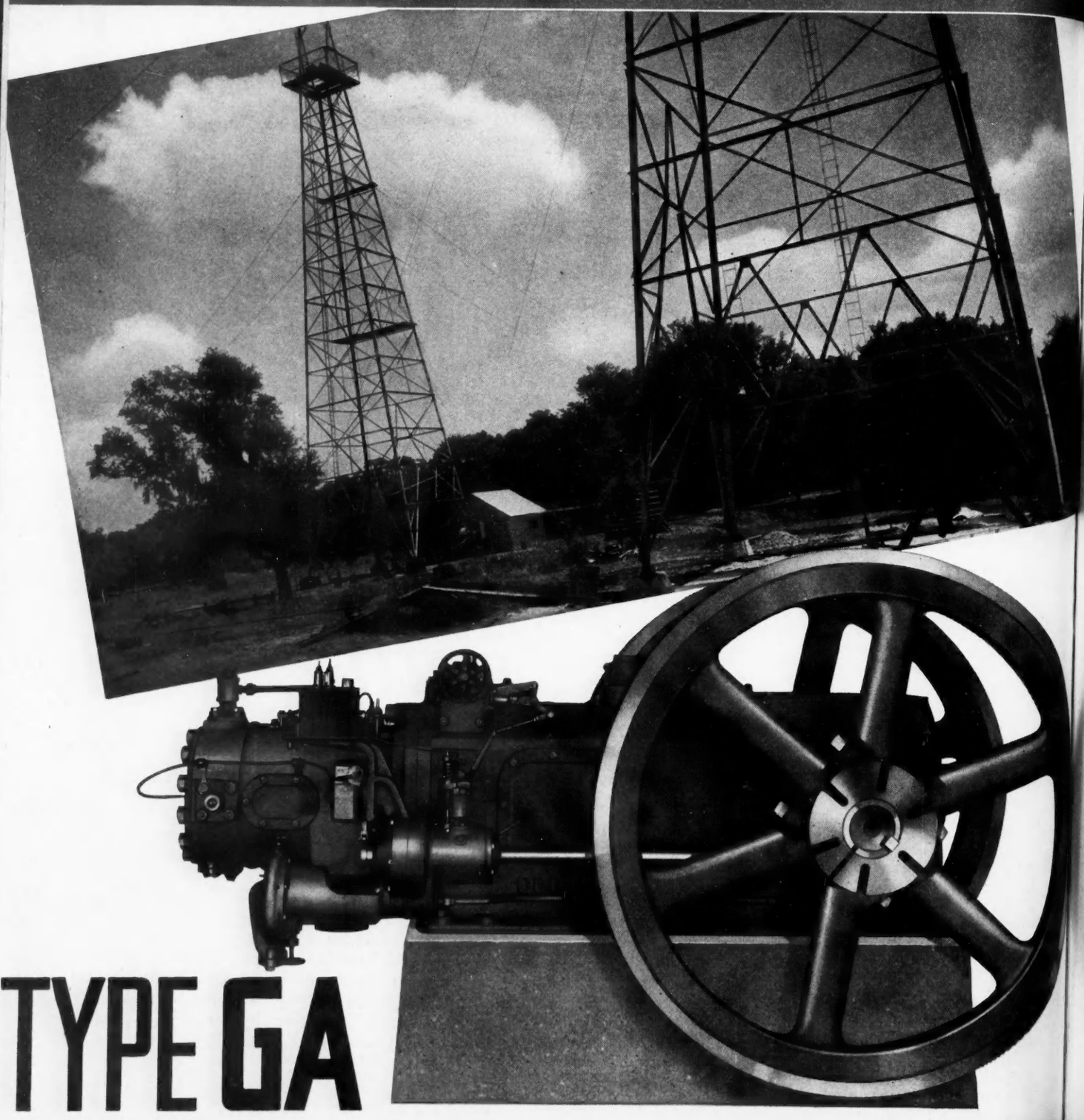
On a lease operated by British American Oil Producing Company in the Mansion area east of the state capitol, a hydraulic pressure system is being used that is a comparatively new introduction to Mid-Continent pools. So far the equipment has proven entirely satisfactory in operation, lifting without difficulty the present allowable. In all, the field had produced approximately 30,000,000 barrels of crude to September of this year, by far the greatest percentage of the present production being produced through pumping equipment.

Well Equipment

Well equipment in use with the hydraulic pumping units varies only slightly from the regular tubed pro-

After it's Written

THAT'S WHEN REA



TYPE GA

THE COOPER-BESSEMER CORPORATIO

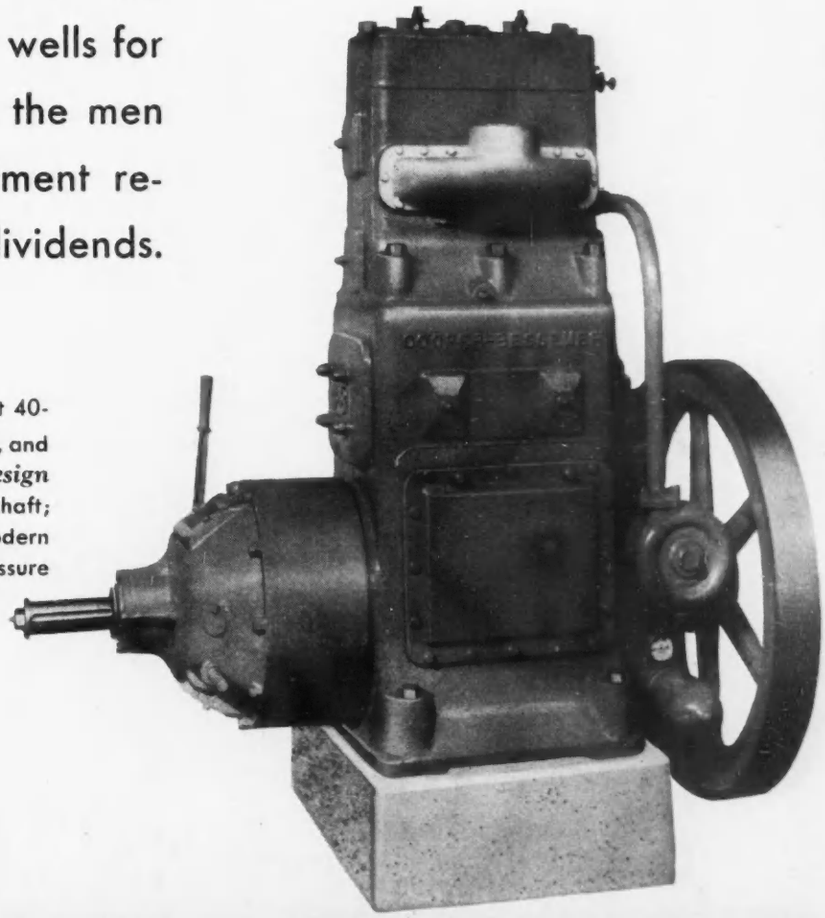
Mt. Vernon, Ohio — PLANTS — Grove City, Pennsylvania

n off the Books —
ENGINE PROFITS COME!

A lot has been said about pumping-engine "economy." Some operators think the answer is "low first-cost." Others—through experience—know that LONG-TIME ECONOMY is the factor that pays the biggest return on their investment.

TYPE G-SD

Cooper-Bessemers are built for the men who want to power their wells for the first and last time . . . for the men who want to see their investment returned again and again, in dividends. *Send for bulletins.*



Type G-SD — At the right is shown the best 40-60 H. P. Vertical on the market. Medium-speed, and heavy-duty, it is a real economy champion. *Design Features* — sturdy, counterbalanced crankshaft; die-forged connecting rods; crossheads of modern type; heavy-duty roller bearings; full pressure lubrication.

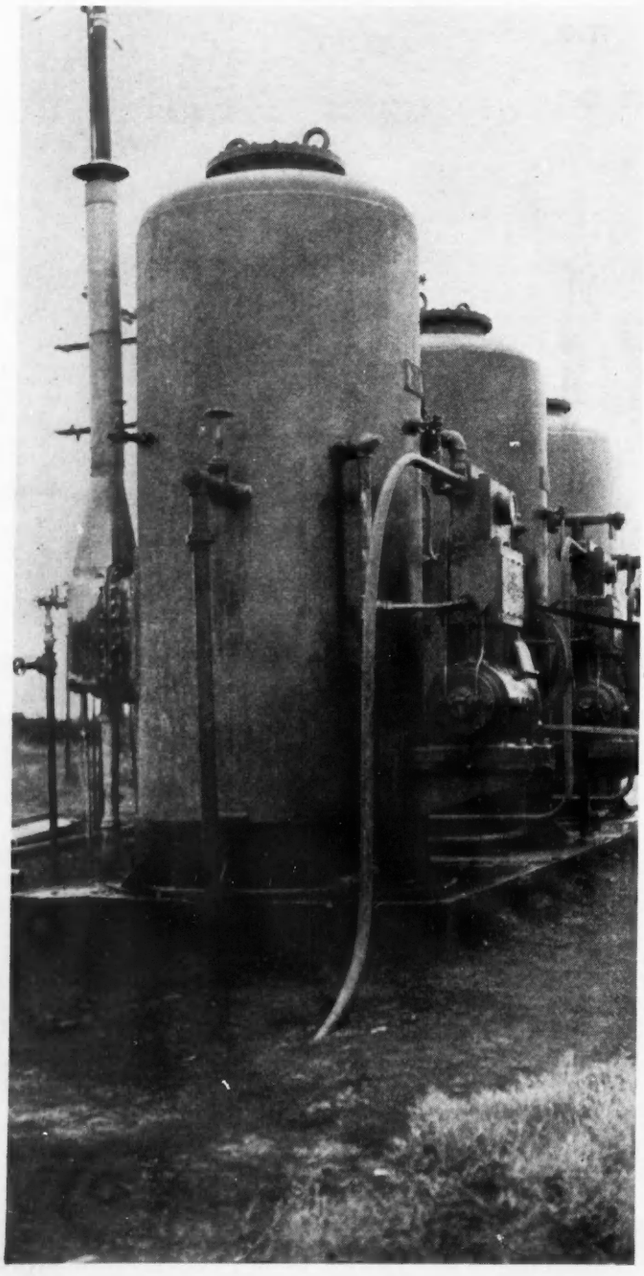
Type GA — Shown at the left is a slow-speed, horizontal, heavy-duty pumping engine built to *outlast* the field in which you install it. Rating is 30 H. P. at 180 r. p. m. — or 50 H. P. at 300 r. p. m. *Lifetime Construction* — rugged and rigid main frame; Timken main roller bearings; die-forged crankshaft; drop-forged connecting rod.

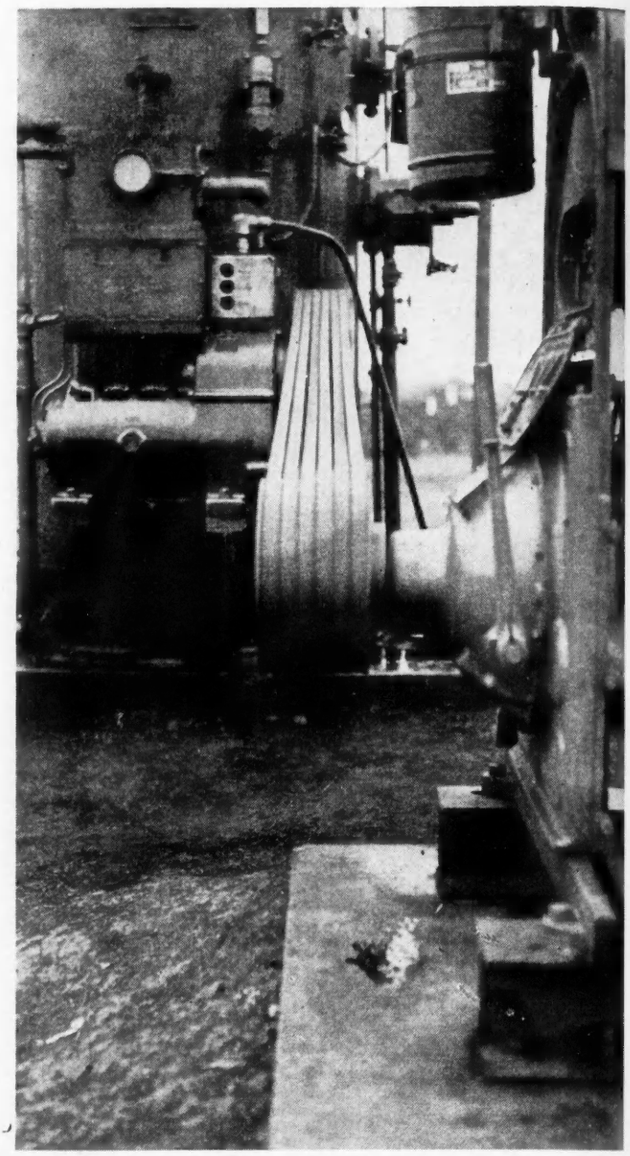
10 5 West 43rd Street, New York City · Mills Building, Washington, D. C. · 640 East 61st Street, Los Angeles, Calif. · 201 East 1st Street, Tulsa, Oklahoma · 631 Spring Street, Shreveport, La.

Magnolia Building, Dallas, Texas · Esperson Building, Houston, Texas

ducer. The hole is cased in the ordinary manner, and 3-inch external upset tubing is run into the hole. The hydraulic pump lift is run into the 3-inch tubing to the bottom, or to a 12-foot gas anchor at the bottom of the tubing. Pressure is introduced into the pump through 1¼-inch hydraulic tubing capable of withstanding pressures exceeding 5000 pounds per square inch. This smaller tubing is connected to the upper section of the lowered pump unit, the pump being actuated by means of the introduced, oil-hydraulic power. To assure cleanliness of the pumping unit and the lowered hydraulic tubing, it is desirable to clean thoroughly either by steaming or through some other means, the pump and tubing interior.

The discharge line from the pump unit curves down in the front of the picture. To the left of the large filter units is the heater, raising the temperature of the pressured crude from average to 120-130 degrees. The three units shown are set on a common foundation of concrete.





Power is delivered to the crude oil pumps by pulley through a geared clutch. Six "V" type belts transmit power to the hydraulic pump unit mounted on the side of the filter. Electric power units to drive the crude pumps were removed and power pulleys were installed to be operated from the natural gas power assembly.

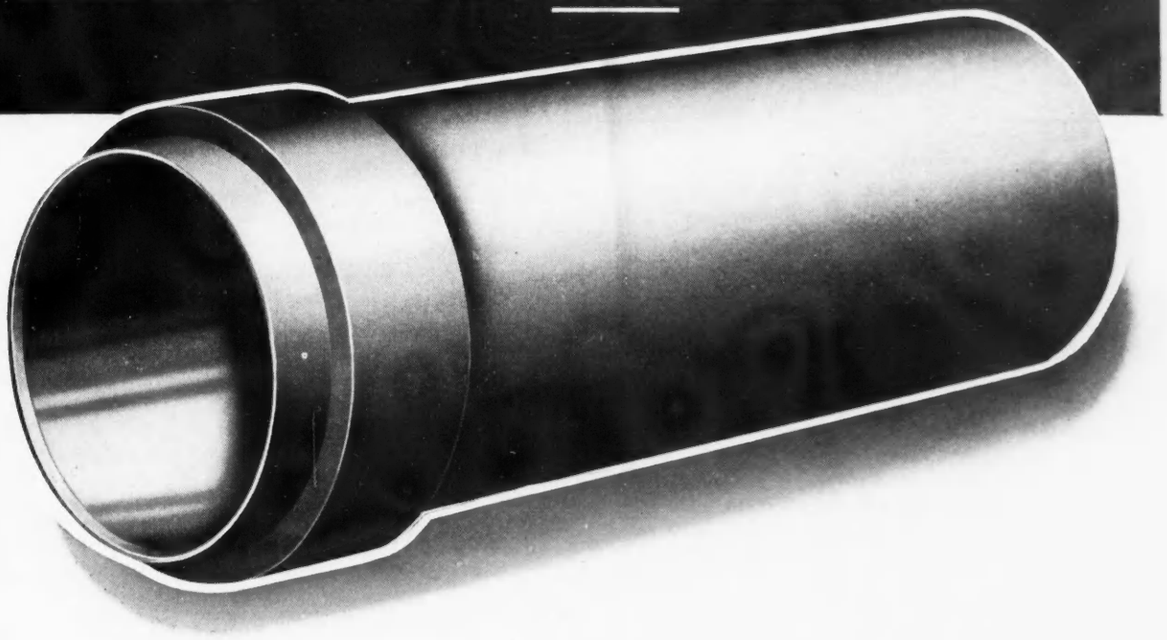
Surface Equipment

Surface equipment consists of filters, hydraulic pumps, heaters for the crude, and powers. As the hydraulic pressure is applied by means of crude as fluid, the take-off for supplying the pressure pumps is directly from the separator, where a small portion of the well production is fed into the filters. Hydraulic pumps are mounted directly to the sides of the filters, capable of displacing 12.6 gallons per minute, operating at about 2600 pounds pressure. Power is delivered to the pumps from individual, vertical, 6-cylinder engines operating from gas produced on the lease.

Heaters increase the temperature of the crude introduced into the well from the production temperature to about 120 to 130 degrees Fahrenheit. This speeds travel velocity and probably reduces radically the formation of paraffin. Filters are back-washed to clean, the crude flow being reversed.

NATIONALLOY LINERS

NEW SUPER DUTY LINERS THAT REDUCE OPERATING COSTS ON IDEAL SLUSH PUMPS



Special processing imparts an extreme hardness (600 Brinnell) with a remarkable resistance to wear and abrasion and a low coefficient of friction . . . Service of four to five times that of regular heat treated steel liners with a relative increase in piston wear is common . . . Standard equipment on Ideal Slush Pumps in the popular liner sizes.

NSCO

National

THE NATIONAL SUPPLY COMPANY

DIVISION OFFICES: PITTSBURGH, PA., FORT WORTH, TEXAS, TULSA, OKLA., TORRANCE, CALIF. - MAIN OFFICE: TOLEDO, OHIO

Gas-Oil Ratio Control In Flowing Wells

By R. J. SULLIVAN, Carter Oil Company, Fairfax, Oklahoma

ABSTRACT

GAS conservation in relation to efficient production of oil is steadily receiving greater practical attention, becoming of more direct interest. Gas/oil ratio control is essentially a problem of coping with free gas and, therefore, of attempting to retain free gas in the reservoir while continuing to extract satisfactory volumes of oil. This demands control of the differential pressures responsible for delivery of oil and gas by the pay formation to the well itself.

Well characteristics referring gas/oil ratio to production rate as a convenient indicator of sub-surface flow pressure are presented from several gas-drive pools. Their behavior in the face of gas-cap encroachment is discussed and seen to be reflective of pool behavior. In amplifying the central proposition that all methods of contending with high-pressure free gas are analyzable in terms of differential-flow-pressure adjustment, the uses of fluid-level regulation, tubing design, sub-surface choking, intermittent flow, acid treatment, and mechanical exclusion of gas from the well are taken up.

Studies of well behavior after application of a positive gas shut-off to the sand face, while illustrating the possibilities of intermittent flow, corrobrate conclusions drawn from their open-hole behavior. They also strongly suggest the future contingencies to be considered by preventive methods of ratio control.

The statements and opinions expressed herein are those of the author, and should not be construed as an official opinion of the Institute or this magazine.

Paper presented at eighteenth annual meeting, American Petroleum Institute, Stevens Hotel, Chicago, Ill., November 12, 1937.

RECOGNITION of the function of natural-gas energy in the recovery of underground crude oil compels recognition of the need for gas conservation. Regardless of the manifold differences of opinion on reservoir classification, the facts persist that many so-called combination pools are produced in such a manner that compressed gas, associated in a free or dissolved state with the oil, becomes the chief propulsive agent, and that hydrostatic pressure and gravity are allowed to play only subordinate parts. Advancing knowledge of the behavior of sub-surface oil and gas has, of course, augmented emphasis upon the purpose and importance of producing oil with as low per-barrel volumes of gas as possible. During the past several years theoretical views as to the effect of gas conservation on economic exploitation and ultimate yield have gathered a background of convincing tangible results.

By all odds, the foremost single factor in promoting realization of the benefits proceeding from proper utilization of gas energy has been proration. From its early makeshift beginnings, obligatory curtailment of withdrawal has incidentally served as an unescapable object lesson highly suggestive of what should and can be done toward efficient production. As a rule, the competitive situation in a flush but restricted pool in the United States prevents any one operator from devoting more than casual attention to gas/oil ratio control. The growing popularity of cooperative or unitized development, together with modern policies of block leasing, tends to minimize difficulties of this ancient sort. Proration, both voluntary and compulsory, has lately gone a step further toward attaining the object of true conservation by offering a definite incentive to the producer who is able to lift his allowable quota at favorable gas/oil ratios. Through direct governmental order or inter-operator agreement, nearly all of the leading oil-producing states have sought to eliminate waste by introducing well spacing, sub-surface pressure, or gas/oil ratio elements into some of their regulations. Ordinarily, the measures aimed specifically at gas preservation stem from the concept of volumetric withdrawal as set forth by the Institute's Topical Committee on Allocation of production.[1a] Application has thus far been confronted by strong opposition, numerous exceptions have been made, and enforcement has not been rigid. Powers

[a] Figures refer to bibliography.

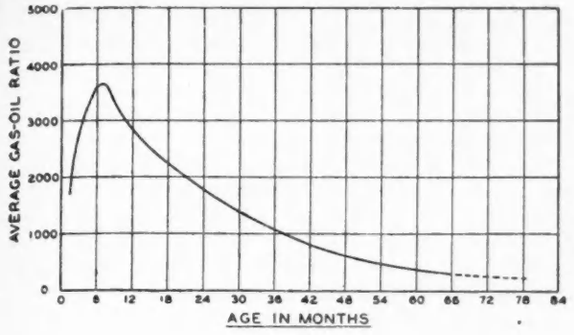


FIGURE 1
Course of Average Gas/Oil Ratios as Withdrawal Progresses (After Marsh).

Curve covers averages on 178 wells at Santa Fe Springs, Signal Hill, Athens, Richfield, and Ventura.

conferred by existing conservation statutes have seldom been fully invoked. Nevertheless, the troublesome, omnipresent "law of capture" is being weakened by modern proration. Examples of production allocation designed to penalize high gas/oil ratios are multiplying steadily. Because of special commitment to ultimate yield, several domestic pools, such as the pressure-maintenance projects throughout the country, expressly contemplate low gas/oil ratio production. Nor have the courts altogether refrained from placing pool welfare ahead of that of the individual, so that ultimate recovery might actually be held a prime objective.[2] The industry is, from every standpoint, surely finding itself in a better position to employ advantageously the progress of intelligent investigation.

Appreciation of Causes

There is no need for dwelling here upon the generally-admitted causes of high gas/oil ratios in flowing wells. Although a rather wide variety of circumstances may be encountered among particularized cases, the significance of sub-surface pressure, of reservoir-fluid properties, and of permeability in relation to formation arrangement, structural position, and depletion is commonly understood. It is sufficient to repeat that the typical pool giving rise to an acute gas-control problem is one in which the equalizing force of water-drive is either absent or rendered unavailable by withdrawal rate. Thus the plotted gas/oil ratio of a simple gas-drive pool traverses an upward trend toward a peak usually beyond the first pumping stage where slippage losses become extreme; thereafter a decrease in ratio sets in toward exhaustion of practically all gas. An example in Figure 1 is borrowed from H. N. Marsh.[3] Depending upon the degree of curtailment and pressure support imposed, the curve shows an improved course through closer extremes. In the same respect, instances of what may be accomplished through proper utilization of natural forces heighten appreciation of the subject's allusions. Figure 2 carries a graphic record of Peru's Mile Six Pool, opened in 1927, and placed on a full producing plan under gas-injection methods of pressure maintenance in October of 1933. It consists of a productive section of some 250 feet between up-dip faults and edge water. By restoring to the sand a gas volume sufficient to compensate for the difference between water encroachment and fluid withdrawal, and by careful attention to gas-cap advance, the gas-oil ratio has been almost exclusively held between 300 and 400 cubic feet per barrel, or at approximately its saturation value under the sub-surface-pressure average maintained. Had the pressure decline observed at the beginning of development been permitted to continue, the recovery by natural flow would not have reached more than an estimated 33 percent of its cumulative figure at the close of 1936. Besides Cumarebo, Venezuela, and other foreign pools, Hilbig and Sugarland (Texas) disclose modified examples of suiting withdrawal to pressure conditions so that gas/oil ratios have been suppressed. Oil which can be extracted without admitting free gas to the well is accompanied by the saturation or minimum possible formation gas/oil ratio of highest efficiency at which all control methods are checked in theory.

We are primarily concerned, however, with the presence of expanding free gas at pressures and in volumes so large as to constitute a control problem removing any doubt of a well's ability to flow. This paper proposes next to discuss in order those control means for which conspicuous claims are put forward, reviewing their qualifications on a common basic norm. It should be kept in mind that, if all other factors might be duplicated, a thick formation of high permeability can be expected to produce at lesser gas/oil ratios than one of comparatively thin section and low permeability.

Well Characteristics

Returning, then, to the more frequent case where free gas is present, it is obvious that, since they are different fluids, oil and gas within a reservoir do not behave identically when impelled by a given differential pressure between the sand and a producing well. Hence, the proportion of gas delivery to oil delivery may be

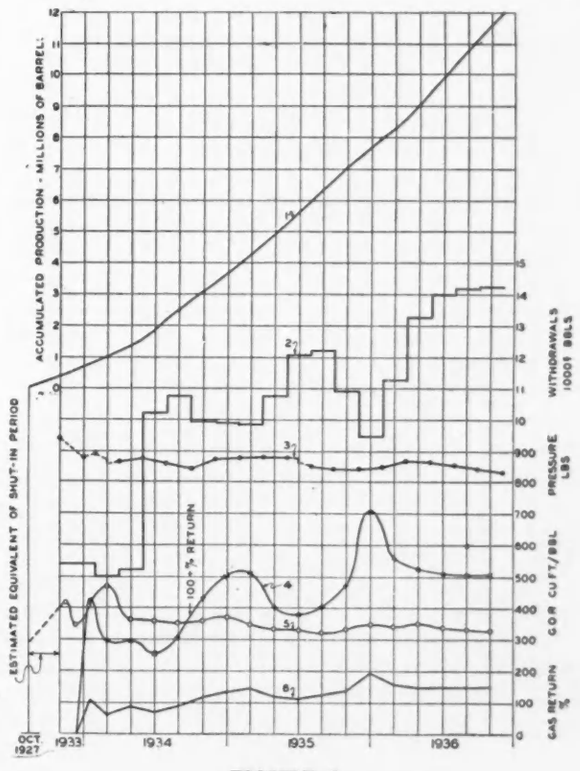


FIGURE 2
Condensed Operating Chart on Mile Six Pool, Peru.

1. Accumulated production.
2. Average withdrawal per calendar day.
3. Average reservoir pressure (at 2,200 ft. below sea level).
4. Gas/oil ratio returned.
5. Gas/oil ratio produced.
6. Percent returned of gas produced.

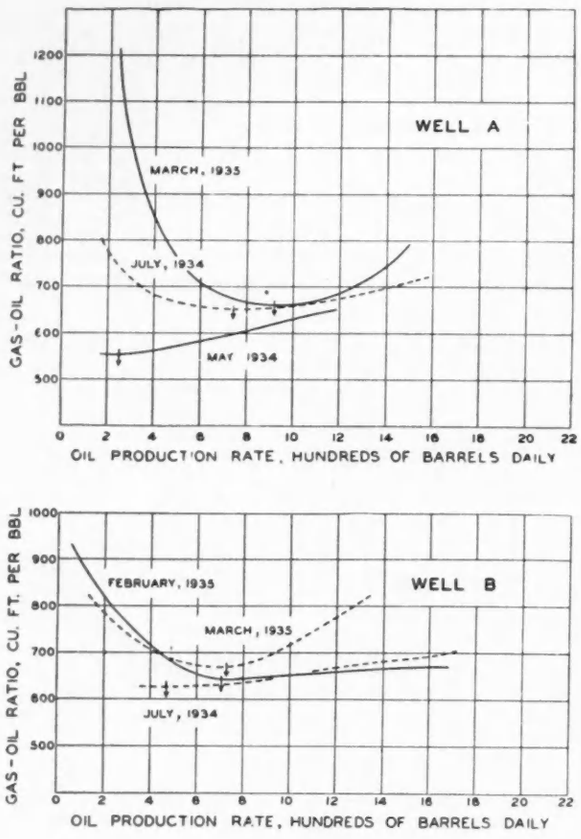


FIGURE 3
Gas/Oil Ratio Characteristics, Lucien Wells.

varied by alteration of the differential responsible for flow. So it is that by regulating the bottom-hole flowing pressure, as conveniently indicated by oil-production rate, the performance of a well with respect to gas/oil ratios may be determined. It has been the writer's observation that most wells display characteristics either of decreasing ratios at lowered back pressures or of decreasing ratios involving an optimum intermediate production rate beyond which ratios again incline higher. Provided tests are trustworthy and complete, many more wells may be placed in this second group at some time in their lives than is perhaps supposed. It is not at all rare, after examining material purporting to represent gas/oil ratio data, to discover that equilibrium while taking readings was doubtful, that all of the gas released at atmospheric conditions was not measured, or that the range of testing was not comprehensive enough. The fore part of characteristics like those presented in Figures 3 to 7 is interpreted as due to gas velocities inadequate to move any but relatively small quantities of oil through either or both the formation and the eductor string to the surface. The reversal side of such curves may conceivably be attributable to excessive release of gas from solution in conjunction with approach of critical oil flow through the formation. The point stressed is that a characteristic can usually be established that will offer a rate of oil extraction distinguished by a minimum gas/oil ratio. Supplementing bottom-hole differential data and reservoir-fluid analysis, factor curves are very valuable in regulating producing rates between wells so as to strive for maximum reservoir efficiency. No pretense is made that the minimum ratio flow of individual wells is the standard for gaging pool optimum.

A single characteristic may not prevail throughout the life of a well, particularly if it is exposed to cap migration. Gas-factor-production-rate histories from wells in certain sectors suggest a disposition of characteristics to move upward and outward from the origin; i.e., the optimum rate and minimum obtainable ratio increase with passage of time. Records of tubing characteristics taken in the Lucien (Oklahoma) Pool are supplied in Table 1, with complete curves shown in Figure 3. It appears that, as depletion progresses here and reservoir pressure declines, the locus of the gas/oil ratio curve in relation to a prescribed set of coordinates is continuously positive for both x and y values. Table 2 details of which are given in Figures 4 and 5, is taken from sample wells in the Keokuk Pool (Oklahoma) producing from a relatively thinner and less permeable sand than at Lucien. Note that U-shaped characteristics are evolved throughout, becoming plainer as the wells grow older. Likewise, the optimum rates are considerably lower from the less prolific wells in Figures 4 and 5. In Table 3 and Figures 6 and 7 are sample records from the South Burbank Pool, where sand thickness and predicted recoveries fall between those of the other two pools cited. Again, as depletion progresses on the one hand and gas-cap encroachment intensifies the situation on the other, the control curves move positively away from the origin. The September 1937 characteristic from well "F," where large quantities of free gas are present, finally terminates at its then current tubing capacity. Past this stage wide-open flow yields the minimum gas factor, although not necessarily superior reservoir efficiency from a number of such wells. At both Keokuk and South Burbank there exists some

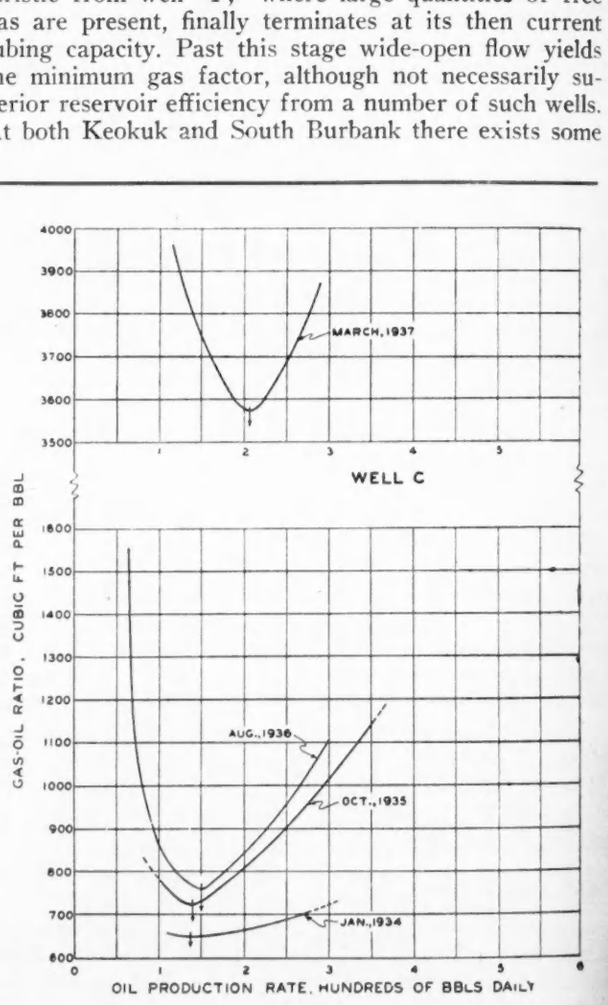
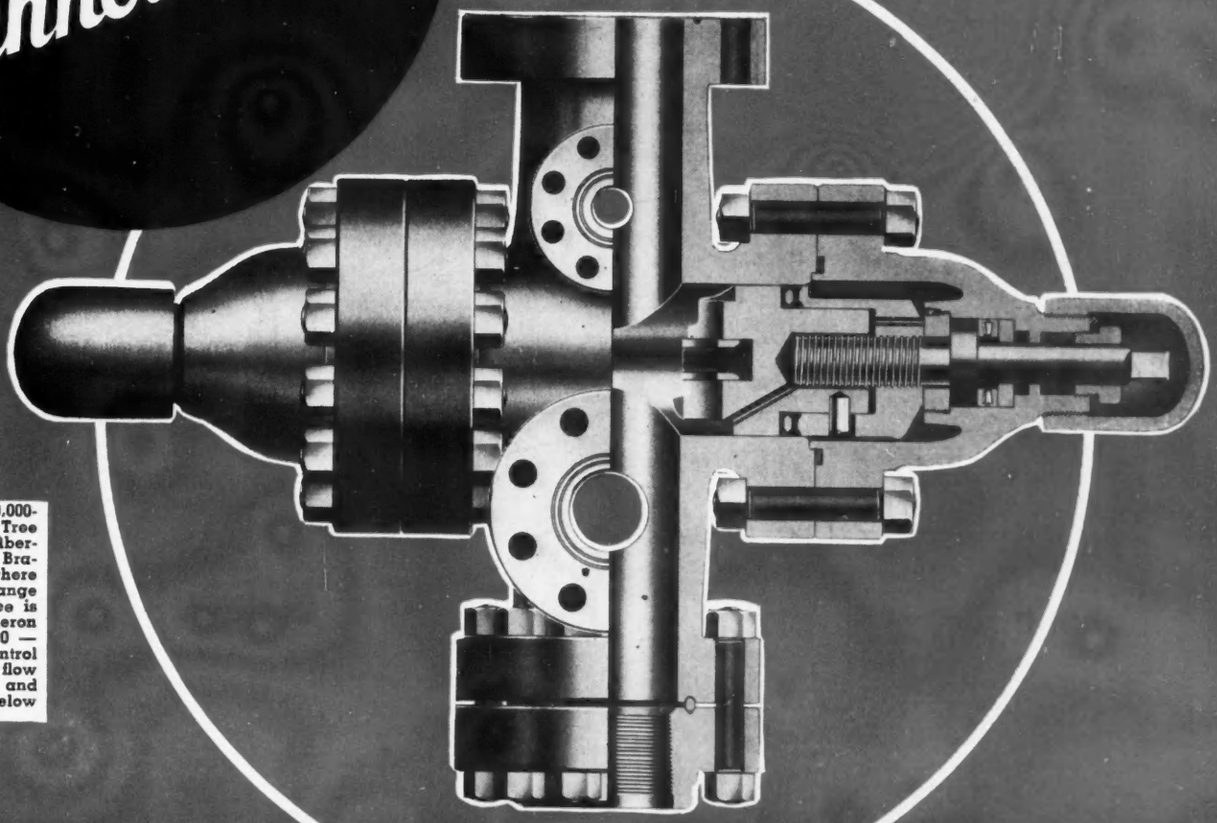


FIGURE 4
Gas/Oil Ratio Characteristics, Keokuk Wells.

Cameron announces

its new TYPE 7-MR-6000 lb. Test and 10,000 lb. Test manually operated Blowout Preventer and Control Head



BELOW: Standard 10,000-pound test Christmas Tree used by Harrison & Abercrombie at Old Ocean, Brazoria County, Texas, where completion pressures range up to 4,200 pounds. Tree is built up on a Cameron Type 7-MR Series 1500 — 10,000 pound test Control Head, having tubing flow outlets above the rams, and casing flow outlets below the rams.

Regardless of anticipated well pressure, Cameron Type 7-MR 6,000 and 10,000-pound test Christmas Tree Control Heads provide extremely positive mastery at every stage of drilling-in and completion work when used as the foundation for high test Christmas Trees.

Complete blowout protection is afforded while drilling-in with drill pipe or tubing; while running liner and screen on drill pipe or tubing; and while screen is washed outside prior to setting liner packer. Full safety also is provided while washing well clear to surface, if desired, before setting liner packer. Finally, an incomparably simple and efficient means of suspending and sealing tubing is provided.

Tubing is suspended on the closed rams of the Control Head by use of a special steel shoulder nipple, having the same O.D. as the tubing collars. Made up in the tubing string at the proper position, the one-piece shoulder nipple may be raised and lowered freely in the oil string without restricting returns. There is nothing to hang up, get out of order, or fail. When rams are closed on the shoulder nipple, tubing string is rigidly suspended, sealed beyond possibility of leakage, and rigidly held down. Wells completed with these Control Heads do not develop tubing and casing pressure equalization due to leakage of tubing seal.

Units are available with any desired combination of casing and tubing flow outlets. If preferred, tubing suspension may be by means of a special steel hanger landed in the top opening of the head. This permits arrangement of casing flow outlets above the rams, which then serve as a positive means of sealing annular space below casing outlets in event flow connections require repair or changing.

Cameron Christmas Tree Control Heads are available for all test pressures ranging from 3,000 to 10,000 pounds. Details and prices on Control Heads and Complete Cameron Safety Christmas Trees will be gladly furnished to any operator on request.

CAMERON IRON WORKS, Inc.

711 MILBY STREET, HOUSTON, TEXAS

EXPORT OFFICE:
74 Trinity Place, New York, N. Y.

MIDLAND:
W. P. (Red) Knight

CORPUS CHRISTI:
J. M. (Red) Teague

LOUISIANA:
Pelican Well Tool & Supply Company

OKLAHOMA and KANSAS:
Carson Machine & Supply Co.

MEXICO:
J. W. Allen, Apdo. 483, Tampico, Tamps.

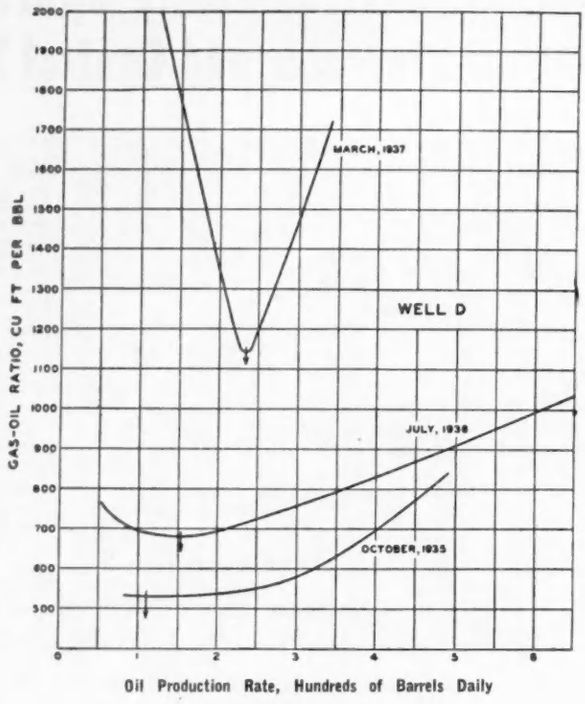


FIGURE 5
Gas/Oil Ratio Characteristics, Keokuk Wells.

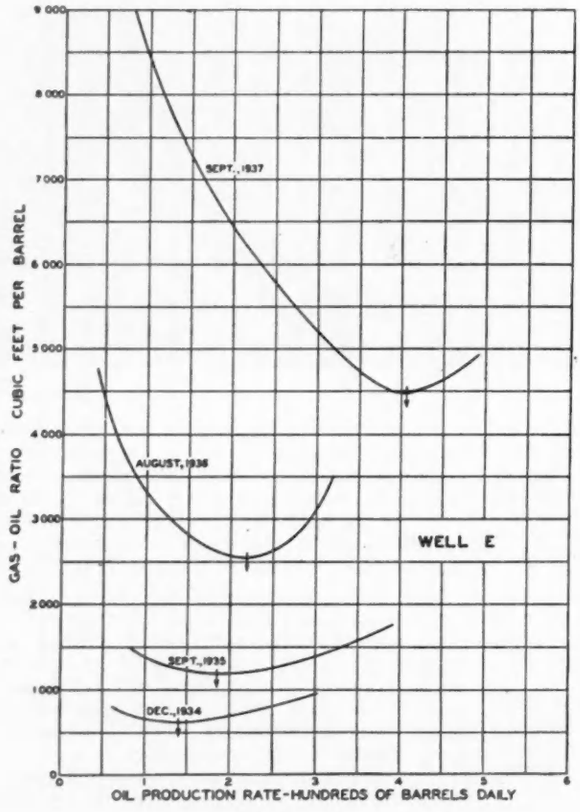


FIGURE 6
Gas/Oil Ratio Characteristics, South Burbank Wells.

indication that another feature of repeated characteristics up to such a point is their becoming sharper or somewhat V-shaped after beginning at a comparatively gentle inflection during the wells' early life. Accordingly, the scope of this method of control in the latter periods becomes narrower, more difficult to stabilize.

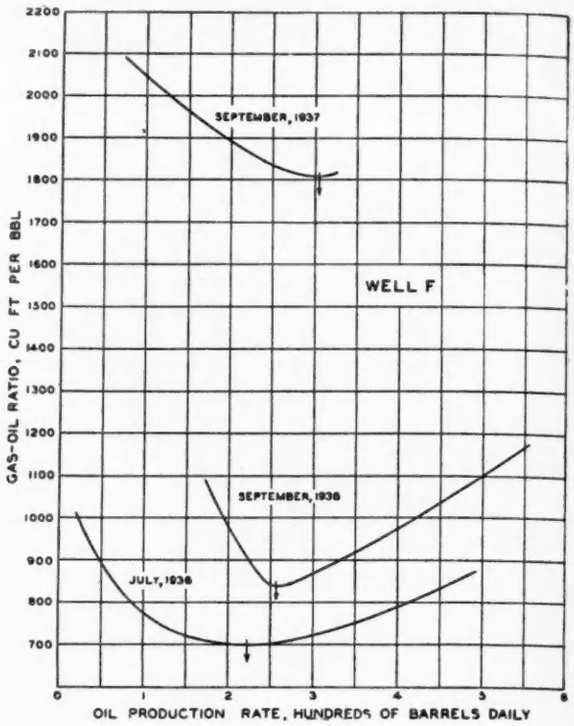


FIGURE 7
Gas/Oil Ratio Characteristics, South Burbank Wells.

TABLE 1
Gas/Oil Ratio Characteristic Record, Lucien Wells

Date	Minimum Gas-Oil Ratio (Cu. Ft. Per Bbl.)	Accompanying Production Rate (Bbl Per Day)	Static Sub-surface Pressure (Lb. Per Sq. In.)	Accumulated Oil Production (Barrels)
		WELL "A"		
May 1934	552	260	1,915	65,487
July 1934	645	735	1,814	87,404
March 1935	660	805	1,709	134,531
		WELL "B"		
July 1934	625	475	1,841	23,330
Feb. 1935	645	700	1,727	171,129
March 1935	665	730	1,712	122,825

TABLE 2
Gas/Oil Ratio Characteristic Record, Keokuk Wells

Date	Minimum Gas-Oil Ratio (Cu. Ft. Per Bbl.)	Accompanying Production Rate (Bbl Per Day)	Static Sub-surface Pressure (Lb. Per Sq. In.)	Accumulated Oil Production (Barrels)
		WELL "C"		
Jan. 1934	650	135	1,720	1,656
Oct. 1935	730	140	1,564	43,079
Aug. 1936	760	150	1,495	57,130
March 1937	1,575	205	1,436	68,184
		WELL "D"		
Oct. 1935	530	110	1,630	83,117
July 1936	680	152	1,490	117,231
March 1937	1,145	235	1,425	146,411

TABLE 3
Gas/Oil Ratio Characteristic Record, South Burbank Wells

Date	Minimum Gas-Oil Ratio (Cu. Ft. Per Bbl.)	Accompanying Production Rate (Bbl Per Day)	Static Sub-surface Pressure (Lb. Per Sq. In.)	Accumulated Oil Production (Barrels)
		WELL "E"		
Dec. 1934	600	140	1,035	46,283
Sept. 1935	1,180	185	916	106,095
Aug. 1936	2,550	220	852	150,812
Sept. 1937	4,470	405	743	153,722
		WELL "F"		
June 1936	800	220	785	14,515
Sept. 1936	935	258	767	30,562
Sept. 1937	1,910	305	645	132,032

• • **Wherever oil is produced, the Tretolite Company processes are recognized as the most dependable and economical method of treating crude oil emulsion to pipe line requirements. A carefully trained staff of chemical engineers, working in the most modern laboratories, assure efficient, accurate handling of each crude oil emulsion problem.**

TRETOLITE COMPANY

MANUFACTURING CHEMISTS

DALLAS **ST. LOUIS** **LOS ANGELES**

Representatives in all Principal Fields

TRET-O-LITE

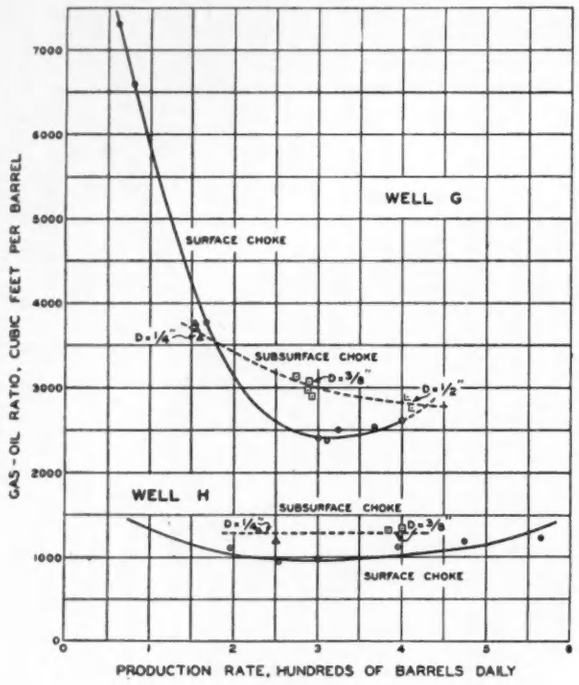


FIGURE 8
Effect of Varying Sub-surface Choke Diameter and Submergence on Gas/Oil Ratios.

Elevation of the minimum ratio per well is known to be reflective of a pool's over-all tendency to produce at consistently higher factors.

In view of the diverse flow peculiarities of oil and gas, a gas/oil ratio reading is almost meaningless unless accompanied by reference to appropriate production rate. Care should be exercised in evaluating results of other control methods to ascertain whether, if treatment does not include actual alteration of production rate, there is not some adjustment of differential on the oil-bearing sand, the gas-bearing sand, or both.

Working Fluid Levels

The explanation for effectiveness of producing through tubing set deeply as compared with tubing set near the top of the pay formation lies in precisely this latter point. Through fluid-level control, the pressure differential on one portion of the formation relative to that on another portion may be regulated so as to bring about reductions in gas/oil ratio. It is sometimes possible to combine regulation with a fluid-head sealing effect above the tubing entry so that free gas is confined to the casing. As a matter of fact, at the Mile Six pressure-maintenance project it has been feasible to inject residue gas into the upper reservoir through the casing-head of a well producing simultaneously from the oil-bearing section of the same thick, permeable formation with a low gas factor. Generally, however, the fluid-seal method is at best a temporary unstable expedient in accordance with the permeability and sand thickness present and with the degree of free-gas encroachment. In marginal cases, very watchful manipulation of tubing-head and casinghead pressures is required. The deep-tubing method, fundamentally dependent upon thick producing sections and high productivity indices, has been discussed at length in technical petroleum literature; and substantial, convincing results have been set down.[3] It was reported in cases to be of passing value at Rodessa, while no perceptible lasting benefit has been detected from producing through tubing hung near bottom in the relatively thin and tight reservoirs of Oklahoma where a decided gas cap has engulfed wells.

Betterment of gas/oil ratio by application of gas-lift, aside from its familiar application to wells which have come to a heading phase of deficient gas or pressure, falls into this same category of fluid-level control in turn referable to differential-pressure adjustment.

Flow-String Design and Sub-Surface Chokes

Claims for the efficiency of tapering tubing and bottom-hole choking are not always properly qualified. Inasmuch as given conditions of pressure differential across a sand face release definite volumes of oil and gas, any notable improvement in the formation gas/oil ratio cannot legitimately be ascribed to either of these contrivances. Some discredit has been thrown upon the soundness of the theory behind tapering tubing.[3, 4] It has logically been held that slippage and friction tend to compensate each other to an extent that the net effect is almost negligible as against that of other considerations.[5, 6] Much more can be accomplished by treating slippage in the formation itself. Avoiding the controversial matter of the type of gas expansion which takes place in a vertical pipe, it is certain that at high pressures rather small volumes of gas are sufficient for lift. But, palpably, if the formation ratio cannot be reduced below a figure far greater than the work requirement, nothing is to be gained from elaborating upon flow equipment. There is no denying that gas unnecessary to the work of lift is a hindrance to efficient tubing flow. Still, since gas delivered to the well bore must normally emerge at the surface, the question inevitably comes down to prevention of gas escape from the formation.

Even in theory, bottom-hole choking aims solely to utilize to better advantage the expansive force of gas by localizing back pressure at the sand face. As to actually combating free gas originating from the producing sand, bottom-hole choking cannot be expected to reduce gas/oil ratios. Figure 8 illustrates two specimens from a group of tests conducted in the South Burbank (Oklahoma) Pool, pertinent data being listed in Table 4. The procedure followed was to take settled measurements of flow through sub-surface orifice openings of different

TABLE 4
Effect of Sub-surface Choke—Diameters and Setting Depths, South Burbank

	Tubing Potential (Barrels Per Day)	Total Depth (Feet)	Tubing Point (Depth in Feet)	Choke Diameter (Inches)	Choke Setting Depth (Feet)	Apparent Optimum Production Rate: By Observation		By Curve	
						Barrels Per Day	Gas-Oil Ratio	Barrels Per Day	Gas-Oil Ratio
Well "G"	656	2,767	2,727	Surface Choke		308	2,372	305	2,420
			2,727	0.250	2,697	159	3,588		
			2,727	0.375	2,700	292	2,942		
			2,727	0.500	2,700	411	2,755		
Well "H"	584	2,870	2,850	Surface Choke		252	939	255	970
			2,850	0.250	2,810	249	1,193		
			2,850	0.375	2,803	397	1,309		

IT'S a cross-section of Republic's new Alloy Steel *Heat-Treated* Casing showing hardness readings around the wall. (Weld at top center—Rockwell B scale.)

Note the uniformity made possible by the ideal combination of a new chemical analysis, Republic's exclusive process of pipe making and modern, scientific heat-treating. Think what such uniformity will mean to you in setting casing in deep holes. Think, too, what this same degree of uniformity in unequaled high compression yield strength, in high tensile strength and in wall thickness will mean to you in safety against collapse and pull-out. Such uniformity banishes chance.

REPUBLIC STEEL

HAVE YOU RECEIVED A COPY OF BOOKLET NO. 187

. . . containing the full story of this new heat-treated casing together with actual collapse tests and deeper suggested setting depths? If not, write for a copy.

Republic Steel Corporation

GENERAL OFFICES . . . CLEVELAND, OHIO

HEAT-TREATED CASING

diameters set at various depths in the tubing string. Well "G" exemplifies wells making large quantities of free gas, while well "H" is typical of findings at producers of less serious volumes of free gas.

Both surface and sub-surface choke characteristics have been plotted against production rate. When beaning well "G" at the surface, the observed minimum ratio was 2372 cubic feet at a flow of 308 barrels per day. Chokes ranging in diameter from ¼ inch to ½ inch were then run at depths from 630 feet to 30 feet above the perforations. In varying the chokes' submergence, no appreciable benefit was apparent—the gas/oil ratio difference amounting to only 220 cubic feet per barrel over any setting range for a given size, with the deeper settings perhaps preferable. Well "H" merely illustrates identical results, the flow characteristics naturally exhibiting themselves in more subdued fashion due to the lesser effects of free gas. It is felt, in all justice, that bottom-choke readings could reasonably have been incorporated into the orthodox well characteristics. The only gain by subsurface choking lay, as one might have anticipated, in securing sustained flow rates below the depressed rate limitations of surface chokes; in other words, so far as free gas was concerned, sub-surface choking was of no aid whatever, merely proving again its known utility in preserving flow where surface choking was unable to do so for more than a brief time at expansion conditions against high back pressures. Here is virtually no difference from simulation of the state existing when a well's pressure or relative gas productivity has actually declined to cessation of natural flow.

Sub-surface chokes and small-diameter tubing occupy a very real and often prominent place in the altogether-different connection of prolonging flow life. An interesting example was established in the Cumarebo Pool of eastern Venezuela by installing 1-inch tubing in several wells which had declined to either the heading or the pumping stage. Table 5 consists of an operating summary derived shortly after the program went into effect, and expresses results for the group in terms of barrels of production.

Production from eight wells included came to only 4 barrels less per day than during the preceding month, and had registered by the end of April a 12-percent addition to the original accumulated total of natural-flow oil. Comparable figures on gas/oil ratios before and after installing small tubing are not available. The object in mind was entirely to postpone artificial lifting. Often, in accomplishing this at the final stage of natural flow, prolongation is marked by lower gas/oil ratios. Few claims are any longer heard for the efficacy of small tubing in overcoming free gas.

Intermittent Flow

Laboratory experiments with partly-depleted sands susceptible to secondary-recovery operations have been correlated with field observations to indicate that capillary movements of reservoir fluid so as to bring about a more uniform saturation lead to improvement of gas factors.[7] Undesirable ratios are sometimes remedied in repressuring practice by a shut-down or differential-pressure adjustment. With favorable depletion status and permeabilities, the same practice is of assistance in handling flush production. Intermittent-flow methods have been resorted to throughout the past two years in coping with a free-gas problem at San Pedro, Argentina. It has also been reported as of some help at Rodessa (Louisiana-Texas), South Burbank, and Keokuk. An instance occurred at Keokuk not long ago when a well located over the gas cap in close proximity to a high-pressure injection well was opened after 30 days of idleness and made 8.5 barrels per hour for 11 hours at a gas/oil ratio of 895. An increase then took place to the same 2150-cubic-feet-per-barrel value at a lesser rate of flow which had prevailed before shutting in. South Burbank wells have behaved in nearly the same manner. Further facts of interest arising from this phenomenon will be discussed presently.

TABLE 5
Additional Flowing Yield Through Small-Diameter Tubing, Cumarebo Pool

Well No.	Date Installed	Size of Choke (Inches)	Daily Average Production (Barrels)		Gas-Oil Ratio		Production Through 1-In. Tubing (Barrels)	Accumulated Total Production (Barrels)
			March 1936	April 1936	April 1936	March 1936		
1	9-21-35	1	165	166	301	385	36,756	174,655
2	2-19-36	1/2-1	81	73	1,925	1,639	6,524	527,882
3	10-17-35	1/2	130	111	230	196	27,364	184,610
4	2-14-35	1/2	172	180	117	232	8,433	255,364
5	10-23-35	1/2	...	75	...	1,747	6,833	57,226
6	8- 2-35	1/2	109	74	1,194	1,917	28,500	90,561
7	9- 6-35	1/2	127	103	233	430	23,667	38,215
8	2-12-35	...	98	...	127	...	3,015	76,629
9	9-23-35	...	...	...	...	...	13,870	38,331
10	2- 3-36	1/4	43	44	909	785	3,131	12,462
Totals	.....	...	110	106	600	714	158,093	1,455,935

To be concluded in an early issue of
THE OIL WEEKLY

FREE entrance of oil with exclusion of sand is the function of screen pipe. To perform this function properly the screen opening, regardless of type, must bear a definite relation to the grain size of the sand.

Tests under simple, ideal conditions, using spherical grains of one diameter, show that a stable bridge is established when the width of a rectangular slot is two times the grain size or when the diameter of a circular opening is three times the grain size. With openings exceeding these values by approximately 25 percent, no bridge will form.

Angular grains will form a stable bridge under the same conditions as spherical grains. Due to the angularity of the grains, the point at which bridging ceases is extended to openings approximately 50 percent in excess of these values for the samples investigated.

Tests with mixtures containing two sizes show that the bridging influence of the larger grain is great in relation to the amount present.

Unconsolidated oil sands with typical grain distribution will form stable bridges if the opening in the screen which retains 10 percent of the sample is taken as the diameter of the "bridging grain" and the rules for uniform spherical grains applied.

Methods and apparatus used for making these determinations are discussed.

The statements and opinions expressed herein are those of the author, and should not be construed as an official action or opinion of the Institute or of The OIL WEEKLY.

Paper presented at eighteenth annual meeting, American Petroleum Institute, Stevens Hotel, Chicago, Ill., November 12, 1937.

SELECTION OF *Screen Openings* AND *Unconsolidated Sands*

By C. J. COBERLY,
Kobe, Inc., Huntington Park, Calif.

THE proper functioning of screen casing is important to the production of oil, as it materially affects the pressure gradient in the immediate vicinity of the well, and it controls the production of sand with the oil. There has been some research and considerable speculation about the shape, size, position, and arrangement of openings in screen and perforated casing; yet little published data on which to base their selection have been available.

Previous Work

At the time the first experimental work reported in this paper was performed (1929-1930) work had been done by E. A. Carr[1a] on the study of core analyses as related to the mesh of wire-wrapped screen casing. Some research had also been conducted by F. G. Tickell at Stanford University, on the bridging action of sand grains of a single classification and of one-to-one mixtures of grains of two classifications. Work on the behavior of core sands in bridging slots had also been performed by F. A. Graser[2] under the direction of Lester C. Uren at the University of California. Most of this work has remained unpublished, so was not and still is not generally available. C. S. Wilson[3] presented an excellent paper on the "Selection and Use of Screen Pipe," covering especially the allowable width of rectangular openings as related to screen analyses of formation samples.

The methods of approach and the range of conditions investigated varied considerably. Variation in results as recorded by these observers was probably due to the degree of stability of bridging which each selected as a standard. Also the grain shape and angularity were not recorded or controlled, nor were their effects established. Therefore, a basis for correlation was not worked out.

Outline of Work

The object of the work reported in this paper was to establish an exact analysis of the bridging problem, to correlate such data as were available with this analysis, and to perform additional experiments to extend the range of variables of existing data.

The following division of the subject was determined

[a] Figures refer to bibliography at end of article.

upon as representing the most logical approach to the general problem:

1. Properties of spheres (steel balls) in bridging openings of various shapes. (a) Balls of one size. (b) Mixtures of balls.

2. Properties of classified sand grains in bridging openings of various shapes. (a) Grains of a single classification. (b) Mixtures of classifications.

3. Properties of formation sands in bridging openings of various shapes. (a) Unconsolidated sands. (b) Consolidated sands.

4. Effect of the position, shape, and arrangement of openings.

It was realized early in the investigation of the properties of screen casing that sands, because of the variation in grain shape, were not suitable for an exact investigation of the bridging of openings, even though they were carefully classified as to grain diameter. Spheres were chosen as the "sand grains" of an ideal system, the behavior of which could be determined and duplicated with an exactness that was impossible with sand grains.

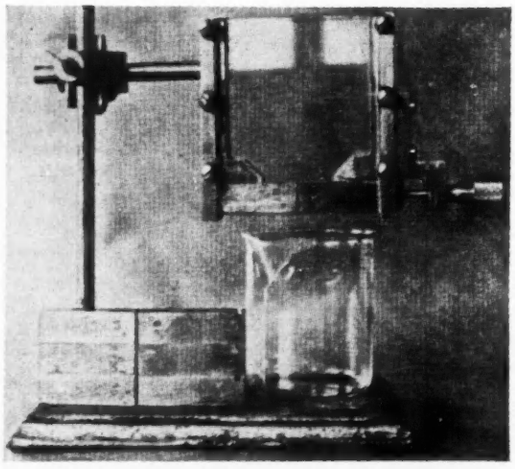


FIGURE 1
Adjustable Slot Apparatus, Showing Interchangeable Blocks for Different Angles of Undercut.

Apparatus

The apparatus shown in Figure 1 was devised to investigate the properties of slotted openings. It was arranged so that the width of openings could be regulated by means of the micrometer screw, and so that the shape of the opening could be altered by inserting different sets of hardened and lapped steel blocks in the base.

For the work on round holes, a 16-leaf iris diaphragm was chosen because of its ready adjustment to different diameters. The approximation to a circular opening was good in the range investigated (0.06 inch to 0.6 inch diameter.)

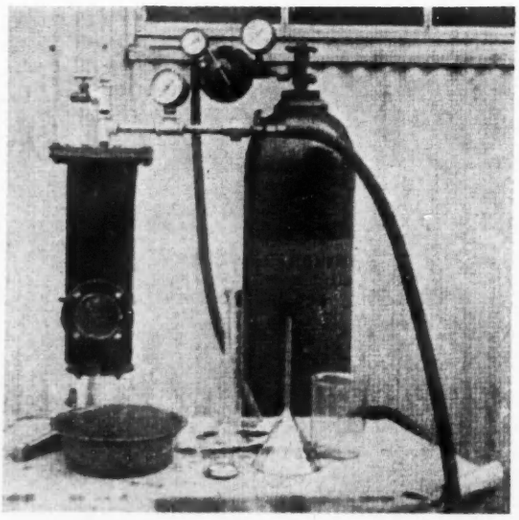


FIGURE 2
Apparatus for Testing Various Openings and Sands Under Pressure with Oil Flowing.

The apparatus shown in Figure 2 was used in conducting experiments on the effect of slot position and arrangement, and on the effect of pressure on bridge formation and stability. It consists of a square container 3¾-inch inside size, with a 2½-inch round opening in the side and bottom over which plates having various slot openings and arrangements could be bolted. The removable cover was arranged for an oil filler hole, and for connection to a source of constant pressure.

Steel balls were used as the spheres for the ideal system, because they were available in quantity in the proper range for sizes, and with the accuracy and hardness surface finish desired.

To facilitate the study of bridging, the following definitions are proposed:

A stable bridge is one which, when disturbed, will reform almost instantly.

The stable opening is the size of opening on which a stable bridge will form. It may be expressed as a dimension or in terms of the size of the bridging medium.

The maximum opening is the size of opening on which a bridge will not form even by blocking the opening from below to permit it to fill with grains under static conditions, and then carefully removing the obstruction. It may be expressed as a dimension or in terms of the size of the bridging medium.

The range of bridging is the ratio of the maximum opening to the stable opening.

The bridging grain size is the diameter of a sphere which would form a bridge on a given slot with a stability equivalent to that formed by a given material on the same slot.

In this paper, whenever grain diameter is referred to, it is taken as equal to the opening in the retaining Tyler screen.

Results of Steel-Ball Tests

The first investigations were made on the bridging of 1/16-inch, 3/32-inch, and ⅛-inch steel balls on slots of rectangular opening and cross-section.

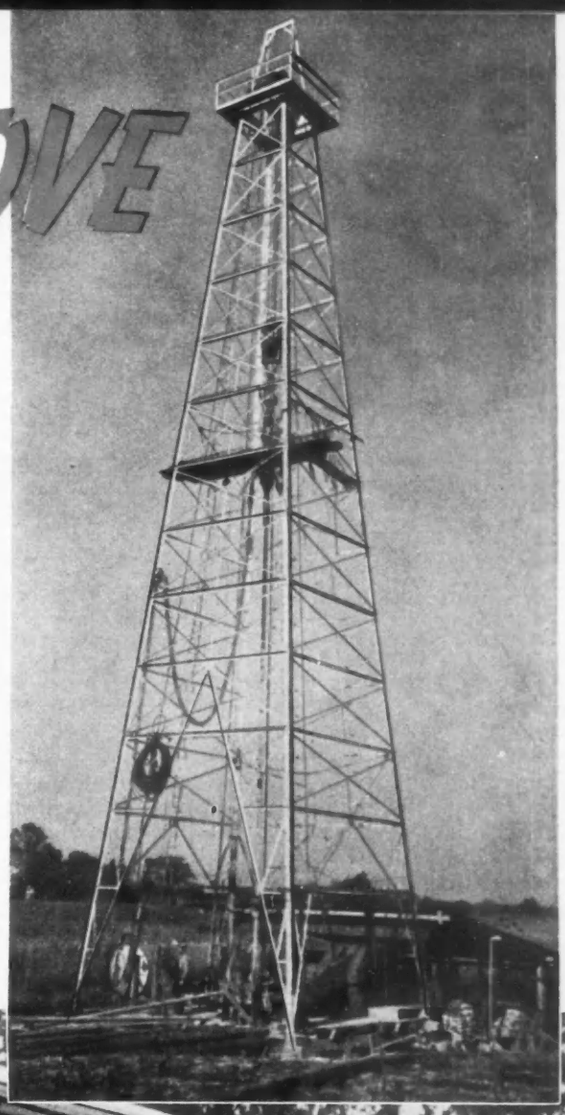
The slot width for stable bridging was found to be two times the diameter of the balls. The upper limit of bridging was found to be at 2½ times the ball diameter. The range of bridging is thus seen to be 1.25.

It was noted that two types of bridges formed—a very stable type with a relatively flat "arch" of two or three balls, and a less stable type with a high "arch" across the opening. The type of arch determined the number of balls falling through the opening before a second bridge formed after one had been disturbed. Figures 3 and 4 illustrate the two types of bridge.

A few experiments using mixtures of two different ball sizes were made. The results are shown in Figure 5. The effect of the large balls in increasing the slot width at which bridging occurs is seen to be considerable as compared to the percentage in the mixture. This is an important factor, as will be brought out later in the discussion on the bridging of formation sands.

It was found that a stable bridge was formed on round holes having a diameter up to three times the diameter of the balls. The maximum hole was found to

EASY TO MOVE



Two drilling contractors chose their Cummins Diesels for a new Illinois operation because they are easy to transport, quickly set-up, dependable in performance . . . flexible . . . economical to operate and maintain.

Think this over! The Cummins Diesel earned the reputation it now enjoys in the oil fields by being able to do its job in a thoroughly satisfactory manner. Can you ask more of any engine?

Write for the new book just off the press, "Faster than Steam." Cummins Engine Company, 1601 Wilson Street, Columbus, Indiana.

MID-CONTINENT SUPPLY COMPANY

Exclusive Distributors Mid-Continent Territory

HOME OFFICE: FORT WORTH, TEXAS

ABOVE: Wilson Giant Model Winch with 100 hp. Cummins Diesel mounted on truck ready to go . . . anywhere . . . any time.

TOP: Cummins Diesel-powered rig on new location in Illinois.

RIGHT: Model L-600 Cummins Diesel driving a mud pump on the new Illinois location.

CUMMINS

Dependable

DIESEL

PIONEER IN MODERN DIESEL DEVELOPMENT

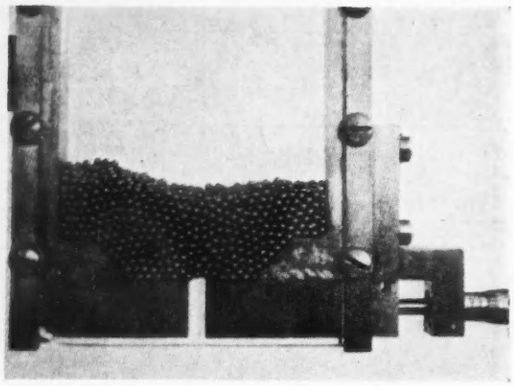


FIGURE 3

Showing Bridging of Slot 0.1875-inch Wide with Balls 0.09375-inch Diameter. This Photograph Shows a Very Flat Arch. If the Bridge is Broken by Displacing Some of the Balls Forming the Arch, a General Movement Will be Caused. A Number of Balls Will Drop Through Before a Bridge Again Forms.

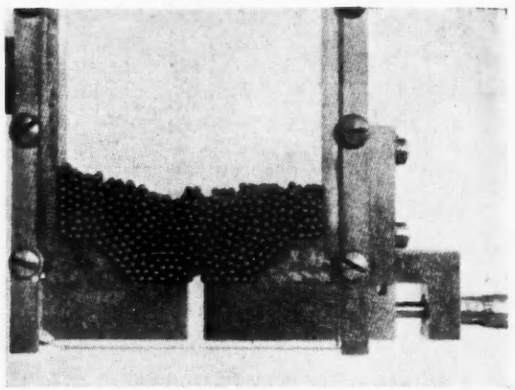


FIGURE 4

Same as Figure 3, Except in this Case a Very High Arch Was Formed. With this Width of Slot, From 2 to 100 Dropped Through Before the Bridge Was Again Established.

have 3¼ times the diameter of the balls. The range of bridging is 1.08, which is considerably less than for rectangular slots. (The apparatus may have influenced the results on the maximum hole somewhat, as it was found in the case of the 3/32-inch balls that the upper limit of bridging was on a hole having a diameter of approximately 3.5 times the ball diameter.)

Throughout the tests on slots and round holes it was noticed that, when the slot or hole was larger than that for stable bridging, the action of the balls in rolling into the wedge-shaped valley formed by the withdrawal of balls as they fell through the slot was enough of a disturbance in many cases to cause the balls to flow continuously through the slot. To obtain a representative test, it was necessary to keep the balls remaining in the tester carefully leveled off. This instability due to disturbances behind the slot will be commented on later in connection with grouped slots.

Results With Classified Sand Grains

The work done on steel balls was repeated, using classified sand grains in the same testing aparatus. The sand used was a beach sand composed of angular grains with well-rounded edges. The general shape of the grains comprising the sand is shown in the photographs of the slot tester.

Three conditions can be studied with sand grains in the tester—dry sand, sand wet with oil, and sand saturated with oil (oil flowing). Tests of these three conditions with identical sand and slot setting showed that practically the same results were obtained with dry sand and with oil flowing through the tester. Both gasoline and crystal oil were used in obtaining this result. After determining this, all tests were made with dry sand because of the convenience and saving in time. Sand which is wet with oil will bridge a much wider slot. Because of the additional variables involved, and because of its questionable practical value, no further investigation of sand in this condition was made.

Figure 6 shows the results of bridging tests of classified sands of a single grain size on rectangular slots. Both curves are approximately linear functions. A stable bridge is formed on a slot having a width of approximately twice the grain diameter. The maximum slot was found to have a width of approximately three times the grain diameter. The range of bridging is then 1.5. This is a considerably wider range of bridging than was found when using steel balls. The increase is probably due to the effect of the shape and angularity of the grains.

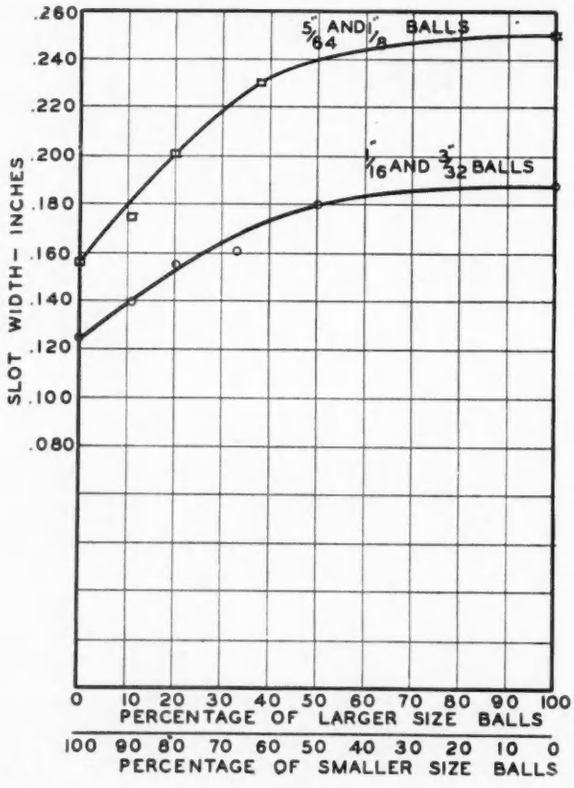


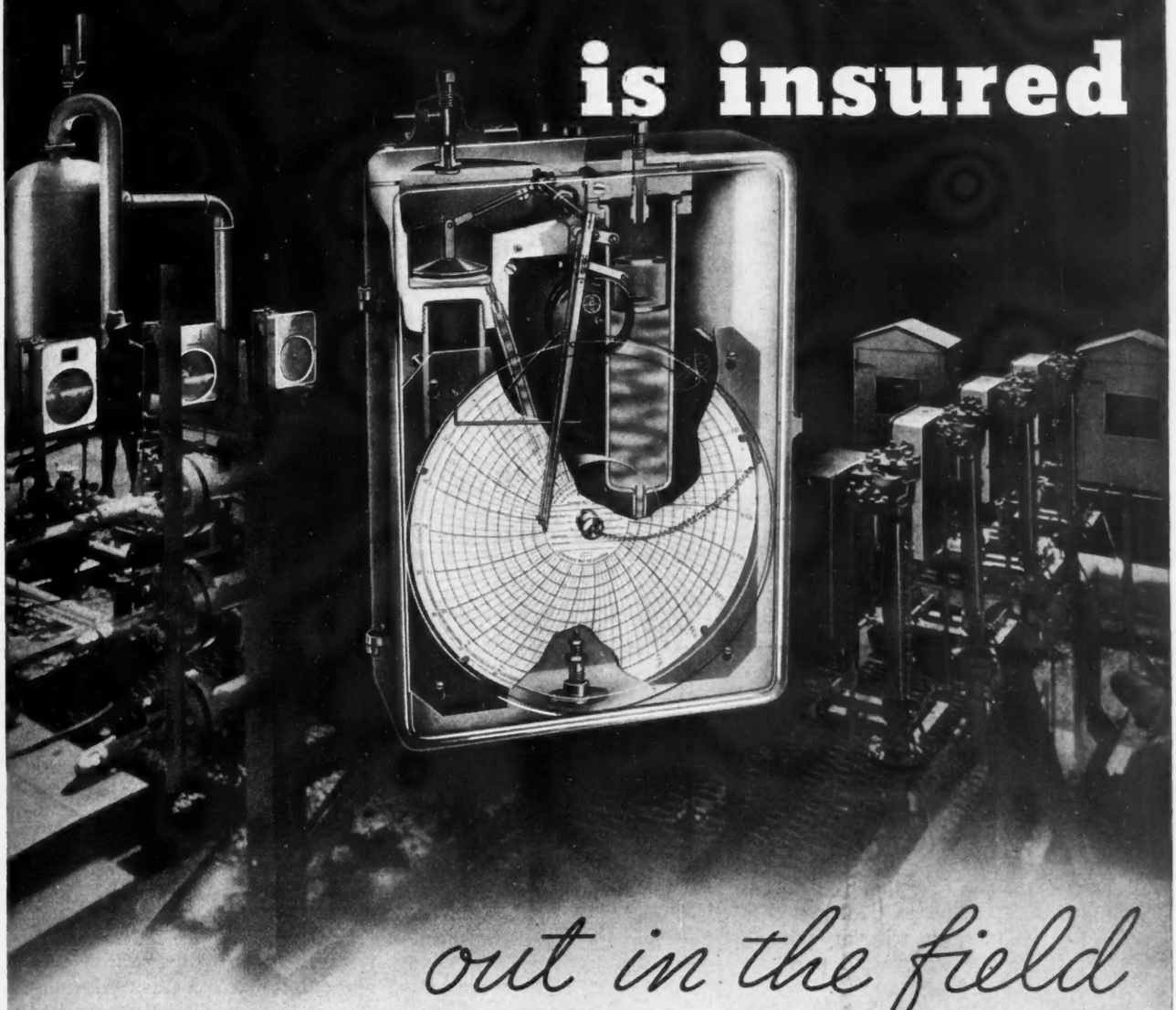
FIGURE 5

Slot-Bridging Tests—Steel Balls.

Slot-bridging tests were also made on binary mixtures of various grains, and the results are shown in Figure 7. As with the steel balls, the effect of a small percentage of grains of secondary sand in increasing the width of slot on which a stable bridge is formed is quite marked. The effect is more pronounced the greater the ratio of diameter between the primary and secondary sands.

The bridging of sand grains on circular holes was investigated, using the same iris as was used for the tests on the bridging of steel balls on round holes. It was found that a stable bridge was formed on circular holes having a diameter of three times the grain diameter, and that the upper limit of bridging was on holes having a diameter as great as 4.5

Where accuracy is insured



out in the field

All of the many significant Westcott refinements in construction have a single purpose . . . a PRACTICAL meter that will HOLD its fine in-built sensitiveness and accuracy—no matter how rigorous the conditions of service, whether for Indicating, Recording or Integrating instruments. ● Accuracy must be BUILT INTO a meter. In the Westcott orifice meter, it is embodied in a score of outstanding features: The precision machining of the differential gage body chambers . . . the low angle of travel of the float . . . the small angular travel of the static pressure tube . . . only one movable part between the mercury surface and the chart record . . . ● Printed or personal engineering information is available on request. Specifications on the popular new Round Case Indicating Flowmeter also may interest you.

344

AMERICAN METER CO. MEASUREMENT ENGINEERS

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
METRIC METAL WORKS *ERIE, PENNSYLVANIA*

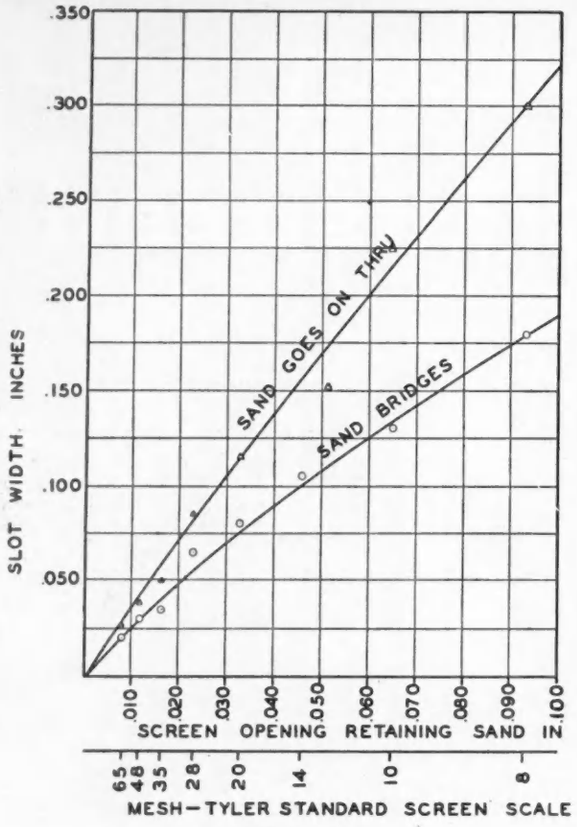


FIGURE 6
Slot-Bridging Tests—Beach Sand.

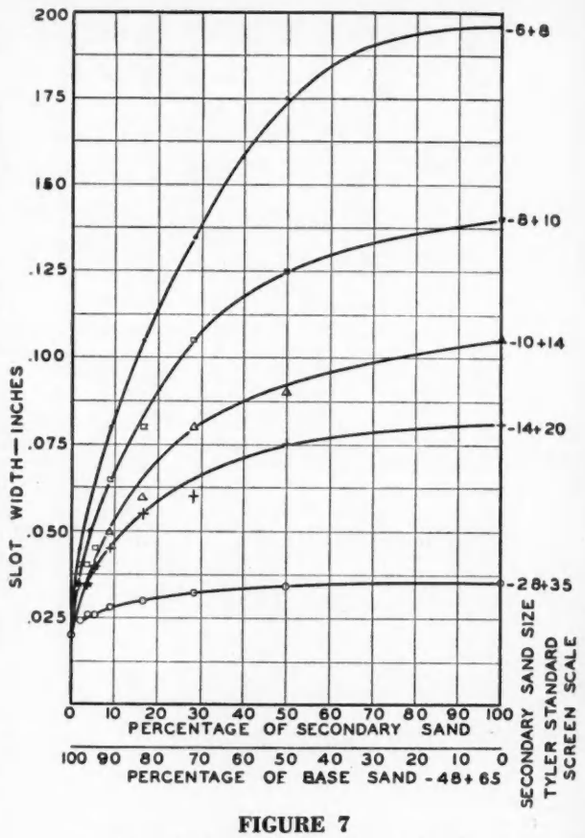


FIGURE 7
Slot-Bridging Tests—Beach Sand.

times the grain diameter. The range of bridging is then 1.5, the same range as was obtained for sand grains on rectangular openings. The increase in the range of bridging over similar tests with steel balls can again be attributed to the angularity and shape of the sand grains.

This brings out the fact that the range of bridging will be a function of the particular sand used. It will not be 1.5 for all sands, but will vary with the shape and angularity of the particular sand under investigation.

Formation Sands

The sands from which oil is produced are complex mixtures of grains. The bridging action of such sands reduced to ultimate particles depends on the grain size, distribution, shape, and angularity. The effect of the latter two items is generally neglected. The effect of the former two can be obtained from the screen-analysis curve.

The type of screen-analysis curve generally used shows the cumulative percentage by weight held on a given screen as a function of the screen opening plotted on semi-logarithmic paper. The Tyler screen scale is the one most commonly used. This scale is arranged so that the area of opening in one screen is twice the area of the next smaller screen. This makes the opening of one screen $\sqrt{2}$, or 1.414 times the mesh opening of the next smaller screen.

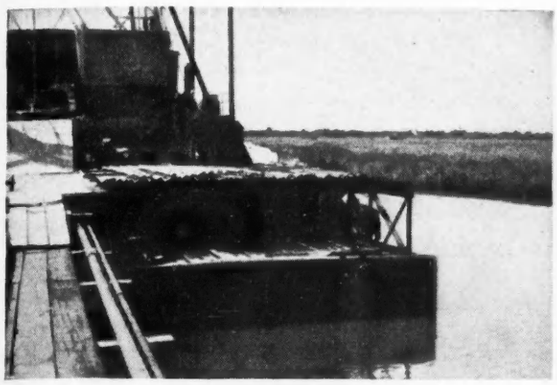
Most formation sands have a characteristic grading toward the extremes of the grain-size range, with a more uniform grading in the central portion of the range. A few sands show a uniform grading throughout the grain-size range. The point at which this uniformity commences is somewhat uncertain, being determined from a visual examination of the screen-analysis curve. At the coarse end of the curve it generally occurs between the 10 and 20 percentiles. For the purpose of establishing a definite degree of uniformity, it is common to use the portion of the curve between the 40 and 90 percentile as a guide, the quotient of the grain size at the 40 percentile divided by that at the 90 percentile being called the "uniformity coefficient." Its value ranges from 2.5 to 7.5 in ordinary cases, although values as low as 1.5 are found. Typical screen analyses are shown in Figures 8 to 13.

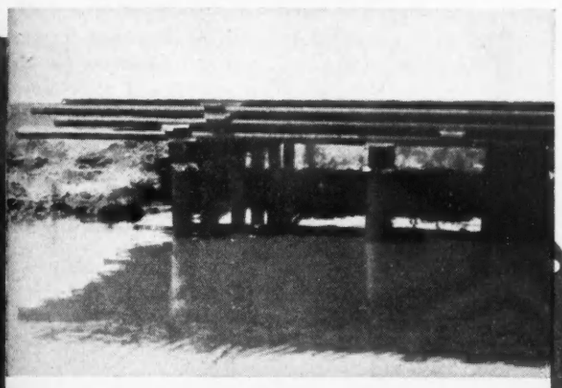
TO BE CONCLUDED
In an Early Issue

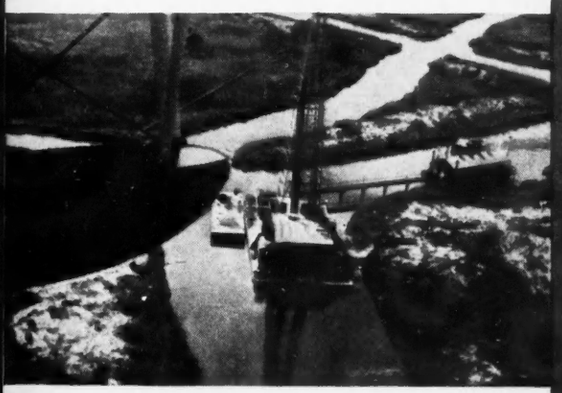
Barge drilling
IN THE MARSHES OF LOUISIANA

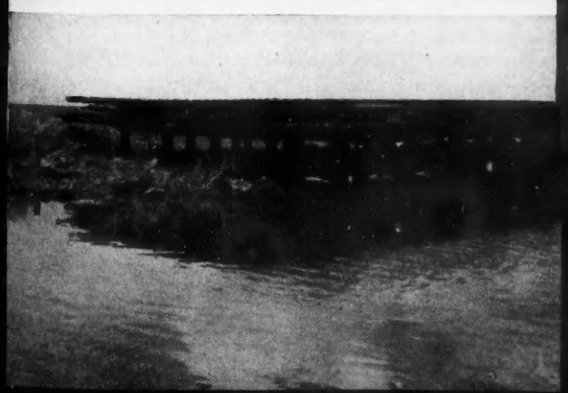
WITH DEPENDABLE

STANDARD SEAMLESS PIPE









Down in the swampy bayous of southern Louisiana, you will find twelve (12) recently completed wells, all approximately 10,000 feet in depth, cased from top to bottom with "Standard Seamless"—more than 120,000 feet of tribute to the dependable qualities of this time-proved deep well casing.

Drilling from barges is an extraordinary drilling operation that requires extraordinary methods and extraordinary pipe like "Standard Seamless"—the standard of dependability in every field.

SPANG CHALFANT, INC.

GENERAL OFFICES: GRANT BUILDING, PITTSBURGH, PA.

Sales Offices: Boston New York Pittsburgh Atlanta Chicago St. Louis Tulsa Houston San Francisco Los Angeles

OPERATION AND MAINTENANCE OF MULTI-CYLINDER

Gas Engines

By H. R. HOGABOOM,
Petroleum Equipment Company, Los Angeles

THIS paper presents the recommendations of the California Subcommittee on Multi-cylinder Gas-Engine Maintenance, and is a summary of detailed discussion held during the course of eight sessions during the year 1936-37 under the chairmanship of Henry Grinnell.

The recommendations made herein may be easily applied in the oil fields.

Control of cooling-water temperatures is claimed to be a major item in maintenance—higher temperatures being recommended. Lubricating difficulties are minimized by the higher operating temperatures; oil sludging is eliminated.

Starting difficulties are carefully analyzed, with recommended procedure in locating trouble. Ignition and carburetion demand the bulk of field maintenance, and detailed procedure is outlined to minimize the cost of this work.

Personnel requirements are briefly discussed, and figures presented on operating costs as established by experience to date.

The statements and opinion expressed herein are those of the author, and should not be construed as an official action or opinion of the Institute of The Oil Weekly.

Eighteenth Article of Series.

Although this paper was presented before the American Petroleum Institute in Chicago November 12, it is such a comprehensive discussion of the care of engines that we are happy to make it a part of The Oil Weekly's "Equipment Care" series.

THIS paper compiles the results of discussions on the operation and maintenance of multi-cylinder gas engines as recently developed after 2½ years of meetings on this subject in a committee of 11 members, assisted by others in sessions with an attendance of from 45 to 60 interested operators and suppliers.

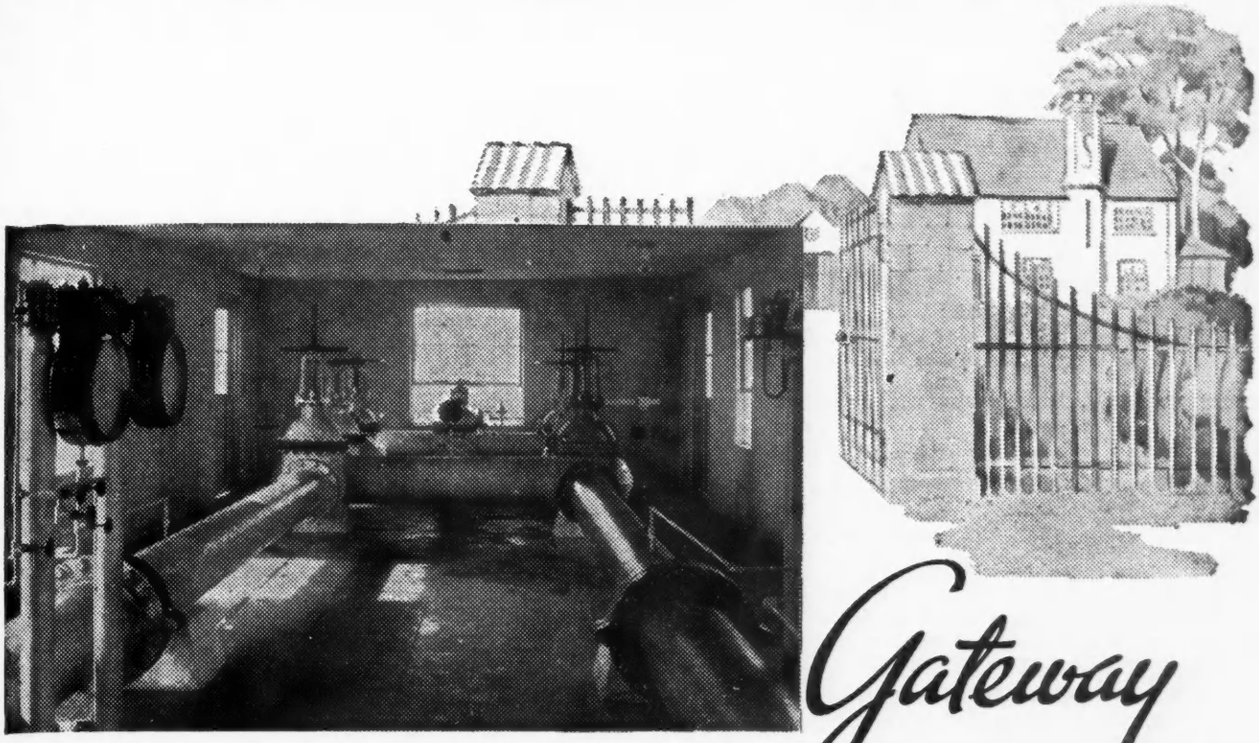
Prior to affiliating with the American Petroleum Institute, the committee had done a large amount of work to determine the effectiveness of the intake manifold-vacuum gauge as a measure of engine horsepower.

Inasmuch as correlation of engine horsepower with actual loads is an important item effecting field maintenance, it has been decided to present the conclusions before proceeding with the general topic of this paper. These are:

1. That, with ignition and carburetion properly adjusted, the manifold vacuum can be used in measuring the indicated power of the engine, but not the developed power.

2. That, with a portable "Prony brake" dynamometer, vacuum gauge, and tachometer, a very close approximation can be obtained of the horsepower developed by an engine installed in the field (see Figure 1). However, repetition of tests of a large number of engines has proved quite conclusively that, due to the various internal and external changes which take place in an engine under continuous operation, a horsepower curve plotted against manifold vacuum and speed cannot be assumed to be at all accurate beyond the limits of a single field test. Thus a permanent installation of a manifold-vacuum gauge and tachometer cannot be used to give continuous indications of horsepower output.

3. That, with proper indicating instruments and an



Gateway TO 1,001 COMFORTS

. . . all a part of the program of operating a dependable Natural Gas Service

● Pictured here is the "gateway to a thousand and one home comforts," the interior of a city gate station served by this Company.

This "gateway," with its heavy pipe, regulators to govern pressure, and precision meters, is the point of delivery of Natural Gas from the pipe line to the city mains for local distribution.

As high pressure Gas comes in from the fields through the pipe lines, it is measured here and then "stepped down" to low pressure as it flows through your city mains to your home and business.

This gate mechanism helps to make possible the dependable Natural Gas Service that eliminates toil and drudgery in your home—that brings untold comfort and convenience to your family.

The city gate delivery of Natural Gas involves a major part of the cost of Gas transmission operations. Yet it is only a part of the total cost of operating a dependable Natural Gas Service.

UNITED GAS
PIPE LINE COMPANY

NATURAL GAS • THE MATCHLESS FUEL FOR HOME AND INDUSTRY

Copr. B. & J. 1937

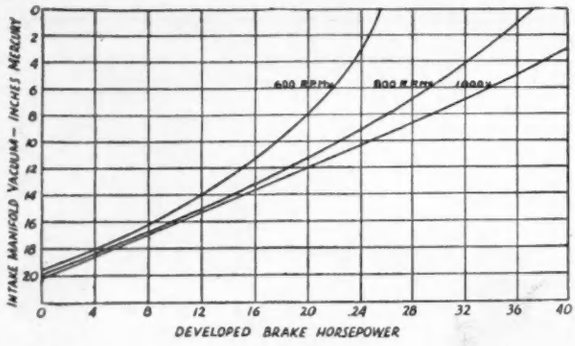


FIGURE 1
Brake Horsepower—Manifold Vacuum—4-Cylinder Engine, 350 Cubic Inches Displacement.

especially-developed device to give simultaneous, instantaneous readings of speed, manifold vacuum, Prony brake scale, and polish-rod position, it is possible to plot very good curves of the horsepower output of the engine during the complete pumping cycle of the well (see Figure 2).

The object of the work was to determine where improvements in design, or a better understanding of the problems involved, might lead to lower operating costs. It was finally decided not to be concerned with selection or design but, assuming that the engine has been properly selected for the required load, to concentrate upon forming a practical guide for operation and maintenance.†

Principal Items Involved

Each meeting was devoted to a special subject, upon which a paper was presented by a committee member, followed by an open discussion—all which was printed and delivered to those attending. The present paper summarizes the principal conclusions of each of the discussions. The topics concern ignition, carburetion, starting, lubrication, cooling systems, mechanical maintenance, and magneto vs. battery ignition. For the sake of brevity, the subjects of ignition and of battery vs. magneto ignition have been combined.

Detailed Discussion of Topics
Ignition

The ignition system as a whole is undoubtedly the largest single factor in multiple-cylinder engine maintenance. It is probably the least understood by the average layman.

Until recently the relatively small engines used for oil well pumping service (almost all of them smaller than 500 cubic inches piston displacement) have had magneto ignition, and have been cranked by hand. Larger multiple-cylinder engines have been equipped with battery ignition and small gas engine starters. In refinery, gas plant, and pipe line pumping plant service there are many engines with battery ignition. Recently one manufacturer brought out an oil well pumping engine of small capacity, battery ignited and equipped with starter and generator.

The magneto is simple, has few parts, is compactly assembled into one unit, and requires a minimum of outside wiring and connections. It is claimed that the magneto consumes less power than the distributor and generator. The theft hazard is less than with batteries. The magneto can be made dust-, moisture-, and explosion-proof.

The magneto results in very short shut-down periods for service, when all testing and servicing is done in the shop. In case of ignition failure in the field, the complete magneto is removed and a new one installed in a few moments; whereas with battery ignition, a systematic test would be required in the field covering battery, distributor, coil, condenser, wiring and generator, with a full replacement of the defective part.

As for the battery system, it is conceded that the real reason for its existence is the availability of the electric starter. The storage battery seems to be the big item in question, because of the probable service expense in excess of that for the magneto, and the greater possibility of theft, especially in connection with units that are shut down.

It should be added that battery ignition and starting has found favor in refineries, gas plants, and pumping stations, mainly due to the fact that an operating engineer is in continuous attendance to give the batteries their needed attention.

Magneto failures can be divided into two groups; electrical and mechanical, with the former considerably in the majority.

Mechanical failures may come from poor alignment or drive couplings; failure of the impulse coupling; bearing troubles, usually caused by excess or insufficient oiling, mechanical defects of the distributor and breaker, or interruptor.

Excessive wear or failure of the drive and impulse couplings is usually due to improper magneto alignment, which should be checked monthly. Bearings are usually excessively oiled.

Electrical breakdown of the magneto can usually be traced to overloading—the load being a function of spark-plug gap, engine compression, and leakage between the point of electrical generation within the magneto and the spark-plug electrode. The spark plug is by far the worst offender, and frequent attention must be given to the gap between electrodes. This gap can usually be set initially as low as 0.015 inch, and should not be allowed to exceed 0.030 inch. The frequency of spark-plug adjustment is determined by the size of the electrodes, and the "heat" of the spark, and a 30-day inspection is certainly advisable.

The "heat" of the spark is determined by the design of the magneto, and at present we have two divergent opinions: one favors the "hot" magneto that will pro-

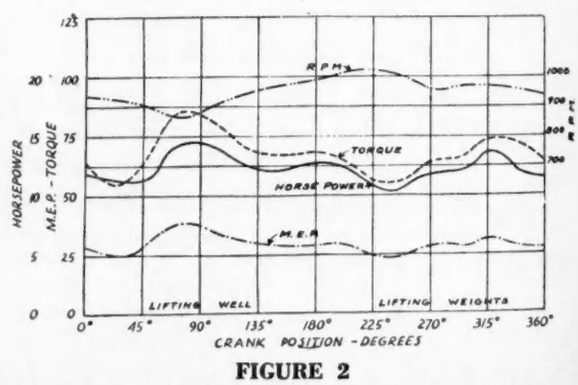
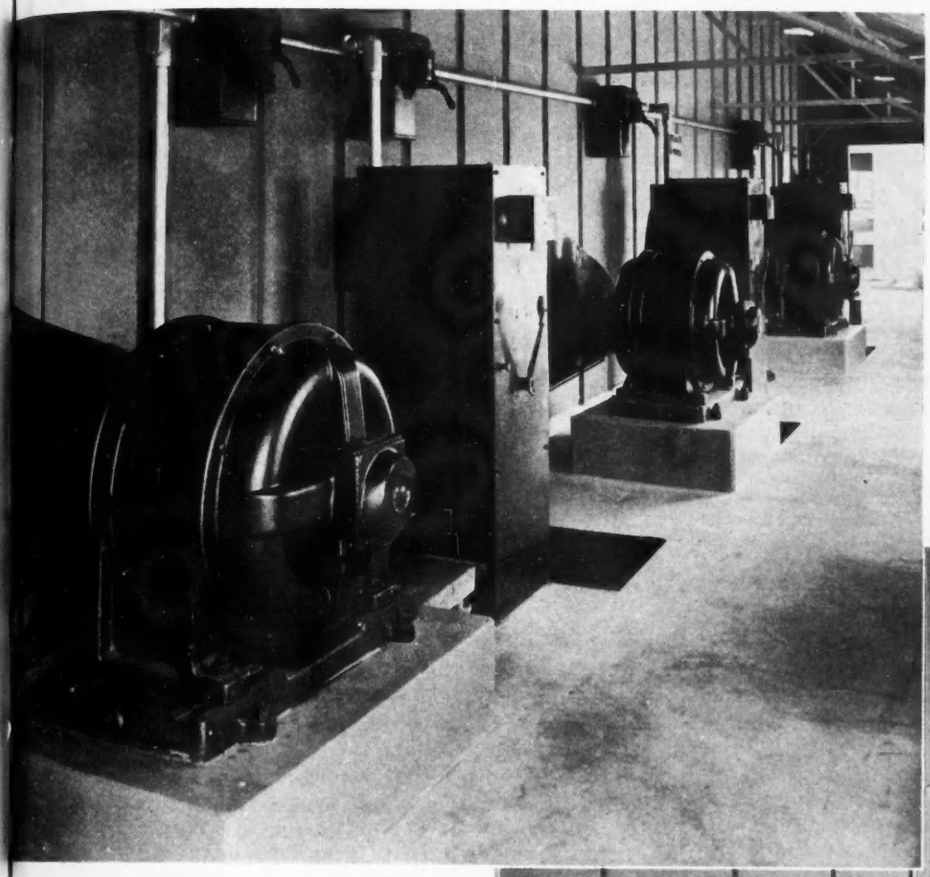


FIGURE 2
Horsepower, Revolutions Per Minute, Torque, Mean Effective Pressure—4-Cylinder Engine, 350 Cubic Inches Displacement.

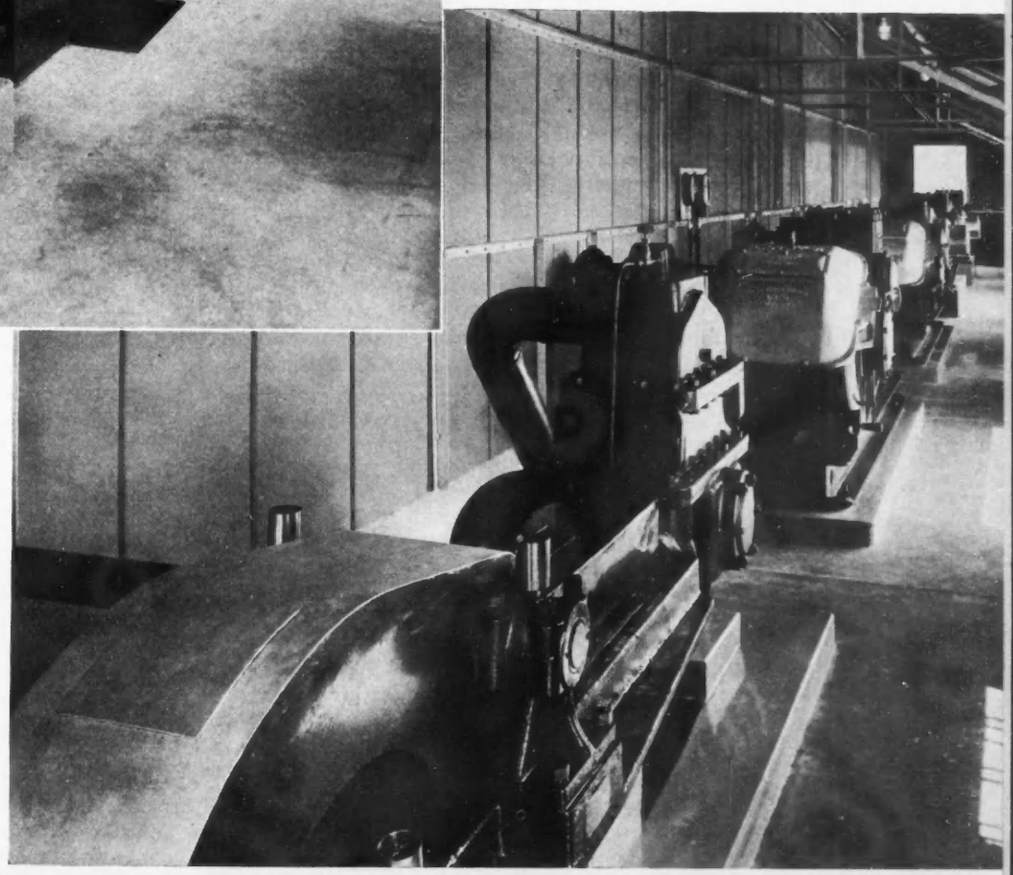
† Unpublished report submitted to the Topical Committee on Production Practice at the Institute's Seventh Mid-Year Meeting, at Colorado Springs, May 31 to June 3, 1937.

Again — IT'S PURCHASED *Electric* POWER

PAN AMERICAN PIPE LINE COMPANY'S NEW 40,000-BARREL STATION IN THE SOUTH HOUSTON OIL FIELD



PROFIT BY USING Purchased ELECTRIC POWER



Above—Part of Motor and Control Room.

★

Right—Pump Room.

HOUSTON LIGHTING & POWER COMPANY

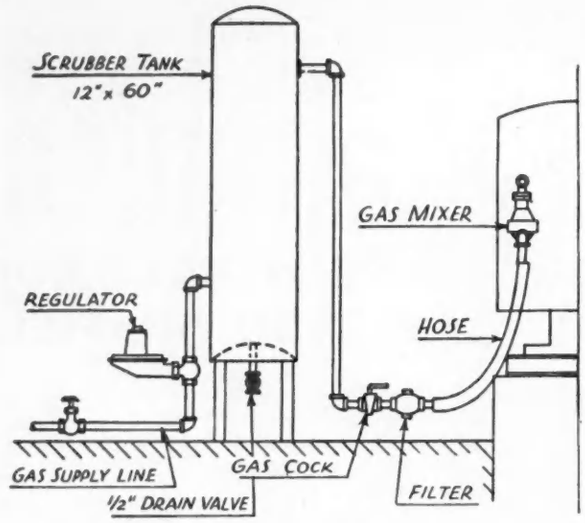


FIGURE 3
Typical Gas-Scrubber Set-up.

duce a spark strong enough to leap a wide plug gap and will overcome the various ignition electrical "leaks" in the system. The other advocates the "weak" magneto, with longer lift for the spark plugs and less frequent inspections and adjustments. The "hot" magnetos are generally preferred, but the question is still in debate.

The "leaky pipe line" between the magneto and the plugs is the wiring which should be kept dry, free from breaks in insulation, and cool. Chafing should be eliminated, and metal conduits avoided.

The timing of the electrical discharge or "spark" within the cylinder is important, and varies with such factors as speed, compression ratio, combustion-chamber design, and plug location.

Spark plugs are a very important item of maintenance. The multiple-electrode type is favored. A "cold plug" is generally adapted to natural gas service. Especially designed "foreign" plugs are difficult to obtain, and have not found favor. Standard makes and designs have been quite satisfactory. It has been proved that a small piece of platinum wire inserted into the end of the plug electrode will greatly increase the life of the plug. Although still in the test stage, some operators are considering the advisability of altering standard plugs in this manner.

As a summary, for ease in starting and continuity of service:

1. Check the spark plugs frequently, and keep the gap below 0.030 inch.
2. Keep the ignition wiring clean and dry.
3. Permit a minimum of field servicing or maintenance of the ignition system. Have all work done by competent men, properly equipped, so that they can make simple replacements in the field and do their testing and overhauling in a shop supplied with the necessary tools and instruments.

Carburetion

Due to the universal use of natural gas as a fuel for oil-well pumping engines in California, other fuels have been disregarded in this discussion.

The subject of carburetion in its entirety can be most easily covered by division into the the three headings: (1) Supply of gas to the engines. (2) Mixing of gas and air for combustion. (3) Maintenance of the entire system.

1. Supply of Gas to the Engine

All our efforts in this connection are directed to the one end—to obtain a supply of gas that is clean, of constant heat content, and constant pressure. As simple as these requirements may seem, they are seldom found in the field.

Lack of cleanliness is by far the worst enemy, and more trouble is caused by foreign matter in the fuel supply, both solid and liquid, than by any other single item under the subject of carburetion. Bear in mind that the pressure regulator, carburetor, and engine are all three designed to handle dry, clean gas—and *only* dry, clean gas.

The principal trouble is probably due to water. Precautions should always be taken to remove this water, and any other liquids, before the gas is fed to the engine carburetor. The most simple method is to use a scrubber at each engine. The scrubber should be large enough to provide a reservoir to receive several days' supply of any foreign matter that may be carried in with the gas supply. Piping connections should be arranged so that the incoming stream of gas is not directed into the opening leading to the engine, but preferably in such a manner that the gas must change its direction of flow within the scrubber. The recent trend seems to be toward a standard 12-inch by 60-inch galvanized water boiler with 1-inch pipe connections. These are very inexpensive and should be satisfactory (see Figure 3).

Many operators have lately resorted to the use of filters in the gas supply lines. The most generally-accepted type is a small, straightway, basket-type filter that will remove all the solid matter which comes through the line. These are especially opportune when the installation is first placed in service, and are usually situated between the scrubber and the engine.

All carburetors operate under a very low pressure, and it is never feasible to try to operate the field distribution system at a pressure that will permit delivery of the gas direct to the carburetor. A pressure regulator, or reducing valve, therefore is employed between the gas supply and the carburetor.

It should also be remembered that these regulators are all tested at the place of manufacture under some standard set of conditions; and, since common practice has fixed a pressure of 20 pounds as being a reasonable one for the inlet side, and 8 inches of water on the discharge, this setting has been adopted by some of the larger manufacturers. It is suggested that, if possible, the main supply pressure be kept at 20 pounds or as near this as possible, and should be kept as nearly constant as possible to prevent fluctuations of the delivery pressure to the carburetor.

2. Mixture of Gas and Air at the Engine

The problem of carburetion is complicated by the fact that:

a. The gases handled, air and fuel, are under different pressure.

b. A wide air-gas ratio is necessary to meet varying heat content of different fuel gases (see Figure 4).

c. Positive control of mixture for starting is essential and, on the "rich" side, the possible decrease in air-gas ratio is very small.

The problem has been attacked by the use of diaphragms or floating members for control of gas supply. The admission of just the right amount of gas during the cranking or starting operation is the big problem, and each manufacturer has provided adjustments for idling or starting, carefully set under test conditions at

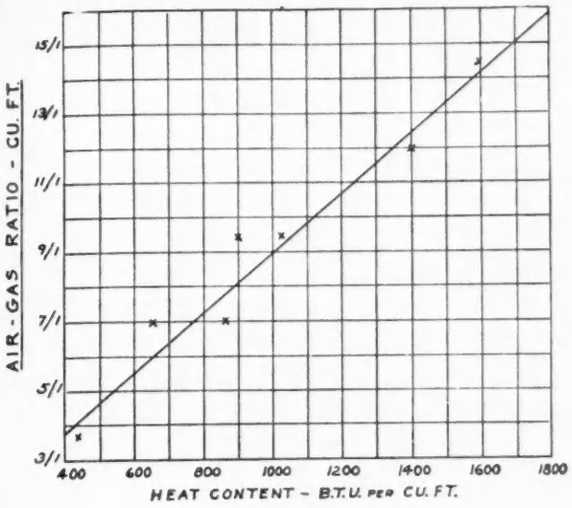


FIGURE 4
Variation of Air-Gas Ratio for Maximum Power (Approximate).

the factory. The most important item to watch out for is the positive shut-off of gas when the engine is down. In other words, each carburetor is equipped with some device which will positively shut off the gas supply when the engine stops, as between cranking strokes; and if the effectiveness of this shut-off is impaired, it will be found to be almost impossible to start the engine. More will be said in this connection under the subject of starting.

Due to the large amount of air handled in the long periods over which these engines operate, it has been recognized from the start that air cleaners should be employed. Without doubt, the cleaner should be of a type that can be cleaned and serviced without constant renewal of filter packs or cartridges, and we find a universal use of an oil-bath type of cleaner. Cleaners can very definitely be too large, as well as too small. In the first case there is poor cleaning due to a lack of wetting of the cartridge by the oil; and in the second case, a small cleaner sets up a restriction to the flow of air, and the velocity may be too high for good separation of dust and dirt.

3. Maintenance of the Entire System

In reviewing the system, the logical place to start is with the high-pressure gas-supply facilities. Be sure that the lines are graded, and that drip pockets are installed where possible, particularly at the end of any long run. Long lines across the lease to an engine should have a full-size length of pipe put in beyond the tee leading to the engine, and graded so that this length of pipe will catch any water coming through. Blow the line out well with the high-pressure gas before the engine hook-up is completed, and frequently thereafter.

Install the regulator in such a way that it can be easily serviced; and at least once every six months inspect it, testing the pressure and cleaning the seat of the valve.

Blow down scrubbers frequently. Provide a plugged tee in the system somewhere between the regulator and the carburetor, and at least once every six months take the pressure of the gas on the low-pressure side, with the engine running under load and also when shut down. If the pressure under these conditions varies over 1 inch of water, it may be due to a leaky seat in the regulator or a restriction in the line between the regulator and the point where the gage is connected.

The following example illustrates a trouble experienced by many operators. The engine is stopped by pulling the ignition switch and, if cranked again within a minute or two, will start readily. However, if 30 or 40 minutes have elapsed, it takes a bad half-hour to get the engine going again. The trouble is usually one of two things: either the gas shut-off device in the carburetor is not functioning, "flooding" the intake manifold; or the regulator is leaking and allowing the gas pressure to build up to the extent that the shut-off device will not hold the gas under the excessive pressure, and the same flooded condition develops.

First service the regulator, and get the valve seat in such shape that it closes and holds the set pressure for a considerable period. If flooding still continues, the carburetor needs attention. A good practice is to keep the pressure to the carburetor as low as possible. It will be easier to start the engine.

Watch the hose connection, as there is a tendency for flakes of rubber to break loose on the inside and cause a stoppage of the flow.

If there is a filter on the gas line, clean it every 60 or 90 days.

See that the air cleaner is filled to the proper level with clean, light oil. Remove it at least every six months, clean it thoroughly by washing in some solvent, and then re-fill to the proper level only.

As for the carburetor itself, keep it clean, periodically inspect it to see that it is clean, but do not change the adjustments or settings until certain that some other item is not the cause of the trouble. If the carburetor was set right and functioned properly when the engine was first installed, the chances are 100 to 1 that it will stay in adjustment for a year or more.

If there is a change in gas conditions, for example the heat content, of course adjustments will be necessary. Bear in mind that the lower the heat content, the less should be the air-gas ratio (see Figure 4). It is quite possible to reach a condition where the gas is so lean that a standard carburetor will not function, in which case it is recommended that a carburetor expert work out the proper combination. Raising the gas pressure to get a greater volume will result in hard starting, and it is much better to use a carburetor designed to operate on the low-heat-value gas.

[To be concluded in an early issue]

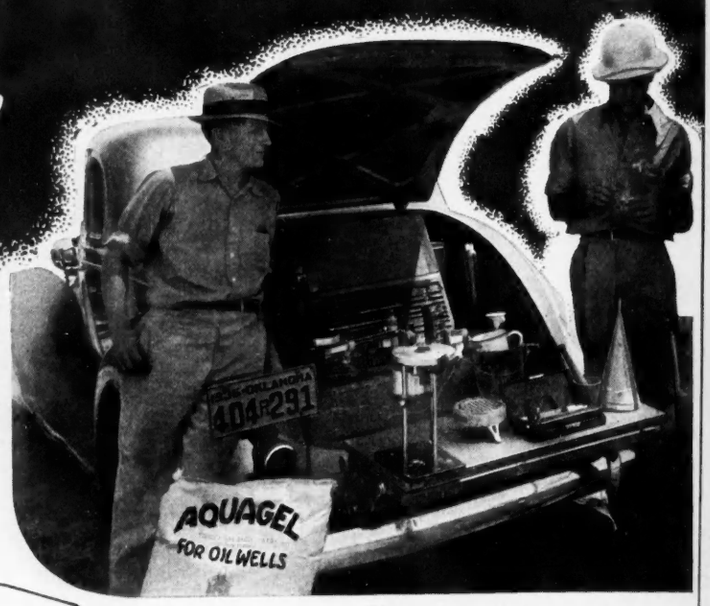
Reprints of the foregoing article are available at nominal prices. Write The Gulf Publishing Company, Houston, Texas.

BAROID

PRODUCTS FOR Mud Control

—so quickly and conveniently obtained from

BRIDGEPORT



The services of the manufacturer's drilling mud engineers are available to Bridgeport customers when needed, free of cost or obligation.

OUR BAROID PRODUCTS

BAROID — Extra-heavy Colloidal Drilling Mud • **AQUAGEL** — Trouble-Proof Colloidal Drilling Mud • **STABILITE** — An Improved Chemical Mud Thinner • **BAROCO** — An Economical, Salt Water-Resisting Drilling Clay • **FIBROTEX**—For Preventing or Regaining Lost Circulation in Drilling Wells.

★ One or more of our 50 Drilling Mud stocks is near your drilling location. When you need Baroid Products in a hurry, telephone our nearest representative. He'll see that what you need reaches your location when you need it. . . Where large quantities of Baroid Products are needed, and requirements can be anticipated, take advantage of our money saving carload service—call for direct shipment from the mill to your nearest rail point.

BRIDGEPORT

The BRIDGEPORT MACHINE COMPANY
Factory and General Offices, Wichita, Kansas

HOUSTON
2317 Quitman St.

DALLAS
1401 Magnolia Bldg.

AND BRANCH STORES

WICHITA
600 East 35th St.

SAN ANTONIO
1909 Alamo Nat'l Bldg.

CORPUS CHRISTI
912 Port Ave.

SHREVEPORT
311 Ricou-Brewster Bldg.

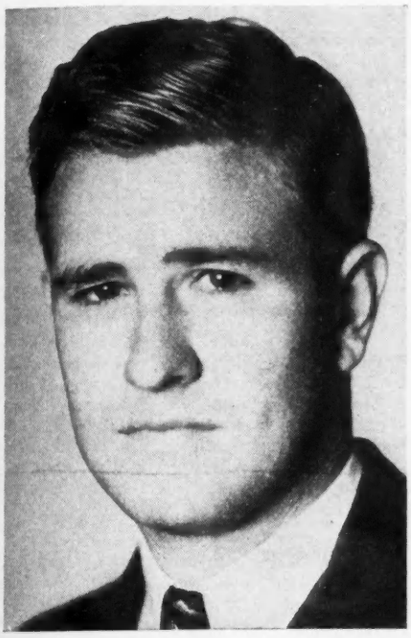
ODESSA
402 2nd St.

TULSA
915 Philtower Bldg.

OKLAHOMA CITY
501 S. E. 29th St.

MEN IN THE INDUSTRY'S NEWS

Studying Heaving Shale



J. M. FROST III

who is connected with the Department of Geology at The University of Texas, is now working on one of the most interesting problems that faces the oil industry. He is doing research on the geologic aspect of heaving shales. Mr. Frost would appreciate very much any information that might be of assistance in this study. His address is Prather Hall, Austin, Texas.

COLONEL LOUIS PINEAU, head of the French government's petroleum department, presided at a recent meeting in Paris of the permanent council of the World Petroleum Congress, a meeting held to consider the venue and date for the Third World Petroleum Congress. Neither was determined.

PAUL BARTRAM, geologist for the Phillips Petroleum Company, has been added to the company's Wichita Falls district office in connection with the company's probable entry into the development of the K-M-A deep field.

R. C. POWLESS has been named scout in the geological department for Tide Water Associated Oil Company for the Southwest Texas district. Formerly at Tulsa offices of the company, he will make his headquarters at San Antonio.

SIMON ARMAND GUIDRY, 69, prominent oil operator of New Orleans, Louisiana, died November 11, after an illness of several months. He had been connected with the oil industry for over twenty years and was the first to develop the important Leesville oil field. Among Guidry's holdings were vast interests in the Leesville, Lake Long, Timbalier Bay and Jeanerette fields of Louisiana.

B. W. BEEBE, geologist in the office of Dr. W. van Holst Pellekaan, vice president in charge of exploration of the Shell Petroleum Corporation at St. Louis, Missouri, and Miss Alice Ruth Bryant, daughter of Mr. and Mrs. John B. Bryant of Wichita, Kansas, were married recently in Wichita.

DONALD J. BAIZE, graduate of the Colorado College of Mines, has been chosen as refinery superintendent by the Roosevelt Oil Company in Mt. Pleasant, Michigan, succeeding Evert Hively, fatally injured in an automobile collision four weeks ago. Baize comes to Roosevelt after completion of a refinery construction job in Alma, Michigan, for Lube Oil Company. He was connected with refineries in both Canada and Oklahoma before coming into Michigan.

AL PARKER, formerly engaged in real estate business in the Rio Grande Valley, Texas, is president of the recently organized Miss-Tex Oil & Gas Company. Other directors of the company include: Nick McCarthy, Easther Thomas, Claude E. Carter, W. B. McCarthy, Leland Speed, and I. M. Beasley.

FREDERICK S. FALES, vice president of Socony-Vacuum Oil Company, underwent an operation for appendicitis last week at the Dickinson Hospital in Northampton, Massachusetts.

JAMES R. LEWIS, formerly examiner in East Texas of the federal petroleum agency, was recently transferred to Kilgore, Texas, from a Department of Interior office at Houston. Other new examiners added to the agency in Kilgore include: L. L. Hollandsworth, Samuel C. Gibson, L. D. Hutchison and Tom R. Rayburn, the latter having been assigned to the accounting department.

J. VERNON, geologist for the Mid-Continent Petroleum Corporation, Tulsa, has established a district office for the company at Wichita Falls. A land man and scout will be added.

F. W. McCURRY, vice president in charge of refining for Derby Oil Company, Wichita, Kansas, addressed the physical sciences division of the Kansas State Teachers Association last week on "Refining Kansas Crude." He used glass models to illustrate physical and chemical reactions and changes that crude oil undergoes in various refining phases.

O. E. WALTON, district geologist, is in charge of the new Corpus Christi offices of the Atlantic Refining Company. F. S. (Ferg) Davis, district land man; Bob Sidall, scout; and J. L. Starns, assistant in the geological department, also are in the office.

C. P. BOWIE, supervising engineer of the San Francisco office of the oil and gas division of the United States Bureau of Mines, has recently returned to his headquarters.

Bowie made a trip through the Mid-Continent and Gulf Coast oil fields, where the bureau is conducting studies on various production problems.

Goes to Illinois

JESSE L. BULLARD

for 11 years scout for Shell Petroleum Corporation in San Antonio district, has been promoted to district geologist for this concern in its newly organized zone centering around the Illinois play.

Bullard was born near Madisonville, Texas, and attended school in East Texas. His career in the oil industry began in 1920 as a roughneck in South Louisiana and the Texas Coastal area. He was next in the land departments of various drilling contractors, following which he became associated with Shell.

H. F. OSLER, Winnipeg, heads the list of directors of the Calgary & Edmonton Corporation, Ltd., Alberta producing company, re-elected when shareholders held their annual meeting at Winnipeg last week. Other directors are D'Alton C. Coleman, Montreal; Rt. Hon. Viscount Chaplin and Frederick Roche, London, England; Alexander H. Douglas and C. Edward Disher, Vancouver, B. C.; Charles F. Joyce, Winnipeg, and F. Gordon Osler, Toronto.

GEORGE BERLIN has succeeded the late Ed. W. Bisett as superintendent of drilling and production for the Skelly Oil Company in the Texas Panhandle, with headquarters at Pampa.

K. L. SAPPINGTON, West Texas production superintendent for the Shell Petroleum Corporation, was re-elected chairman of the Permian Basin chapter of the American Petroleum Institute at a meeting held November 6 at Hobbs, N. M. The following were named vice-chairmen: G. A. Poole, Odessa; Fred Hyer, Big Spring; Earl Griffin, Midland; and Hugh L. Johnson, Hobbs. The latter two are to be head of the membership and program committees, respectively.

HERBERT A. GIDNEY, of the Gulf Oil Corporation of Pennsylvania, has been named a vice president of the Controllers Institute of America.

GRADY KIRBY, geologist, is in Kenora, Ontario, Canada. He will supervise drilling of one more well at Mattoon, Illinois, before returning to San Antonio.

PAUL HINYARD, Shell Petroleum Corporation scout in the Corpus Christi district for three years, will replace Jesse L. Bullard in the San Antonio office, to act in the same capacity.

J. M. TROXELL, chief geologist of the Kansas-Oklahoma-Illinois division of The Texas Company, was a visitor in Wichita, Kansas, last week.

H. A. NORBERG, since 1931 with Phillips Petroleum Company at Bartlesville, has been named vice president and general manager of the Nelson Electric Manufacturing Company, Tulsa, C. B. Nelson, company president, announced last week.

OGDEN PHIPPS has been elected a director of Seaboard Oil Company of Delaware to succeed the late Ogden Mills.

JOSEPH MORERO, chief geologist for Skelly Oil Company, has returned to Tulsa headquarters of the company following a visit to South Texas oil fields.

ROY HAZZARD and B. W. Blanpied, geologists for Gulf Oil Corporation, Shreveport, Louisiana, will be the principal speakers at the regular monthly meeting of the South-Louisiana Geological Society, to be held at 7 P. M., November 15, at the Majestic Hotel, Lake Charles, Louisiana. Their subject is "Occurence of Chickasawhay and Vicksburg in Wayne County, Mississippi."

DR. L. UBBELOHDE, prominent in Germany's oil industry, recently visited Paris, France, to attend the organization meeting of the permanent council for the Third World Petroleum Congress.

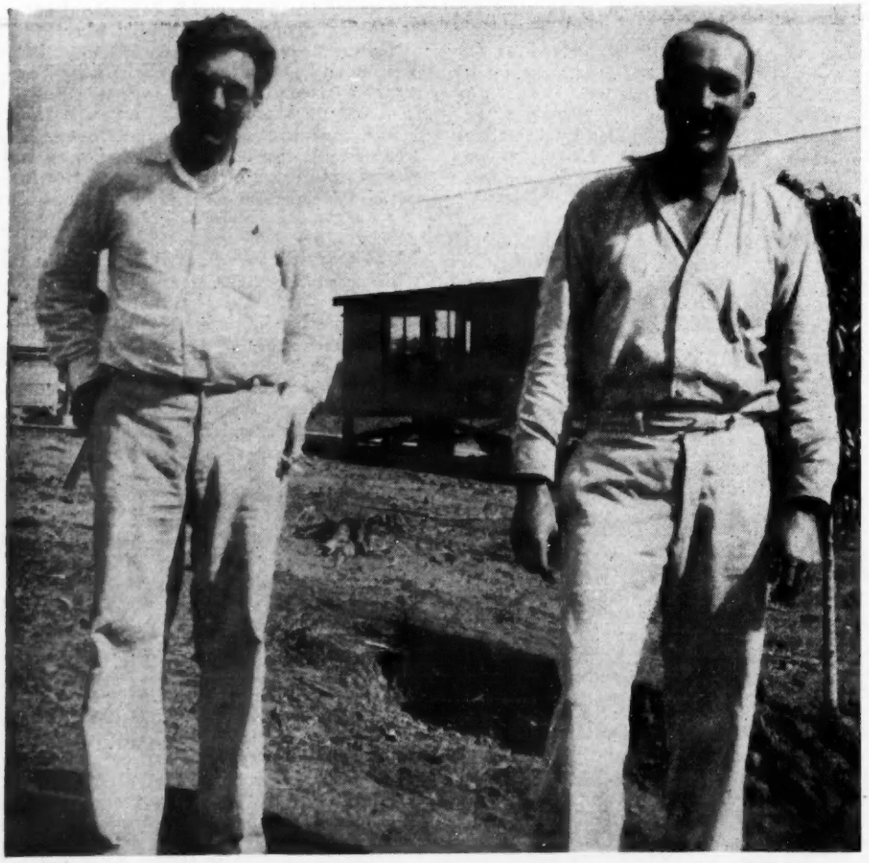
EARLE SHORT, independent operator of Houston, recently returned from a trip to Los Angeles, California.

N. C. McGOWEN, of Shreveport, Louisiana, president of the United Gas Company, was a recent visitor in Houston.

ING. ANGOT, technical director of Steaua-Romana in Roumania, is visiting fields of the Gulf Coast.

GLEN GRIMES, consulting geologist of Oklahoma City, was the principal speaker at a meeting of the Oklahoma City Geological Society November 8. His subject was "Geology of the Tatums Field in Carter County—with Notes on Deep Drilling at Fox."

Down in Colombia



At left is J. S. Walker, drilling superintendent, and at right is Levi Cash, driller, both active on the Barco concession with Colombian Petroleum Company.

JOHN WIELAND has been named advertising manager of the Standard Oil Company of Ohio. He was formerly executive secretary to W. T. Holliday, president of the company.

CLINTON S. BAILEY, Mattoon attorney and representative of several Mid-Continent oil firms in the Illinois basin area, has made an exhaustive study of petroleum which begins with events prior to Biblical times and presents a resume of the industry down to the present time.

REAGAN TUCKER, geologist with Buckingham Oil Company, Corpus Christi, Texas, was a recent visitor in Houston.

WERNER TAPPOLET, geologist for Compania Mexicana de Petroleo, "El Aguila," S.A., Mexico, is touring the United States prior to embarking for Switzerland, where he will spend two months.

PHILIP N. FAINE, of New Straitsville, Ohio, secretary-treasurer of the Ohio Pennsylvania Grade Oil Producers' Association was recently elected a director of the Independent Producers' Association of America, to represent the state of Ohio, at the annual meeting to be held at Tulsa.

E. L. WILSON, with Simms Oil Company, Dallas, Texas, stopped in Houston last week en route to Arkansas.

CHARLIE HOFFMAN, with Southland Royalty Company, Fort Worth, Texas, recently was a Houston visitor.

H. C. COCKBURN, independent operator of Houston, recently made a trip through the coastal region of Louisiana.

J. M. COPELAND, independent operator of Bay City, Texas, was visiting in Houston last week. He has interests in the Old Ocean field, Brazoria County, Texas.

OSCAR WALTON, geologist for Atlantic Refining Company, was recently transferred from Shreveport, Louisiana, to Corpus Christi, Texas.

JACK WOODWARD, West Texas district petroleum engineer for Magnolia Petroleum Company with headquarters at Midland, is recuperating in Brownwood from an emergency appendectomy.

ERNEST RUBSAMEN, independent operator of San Antonio, Texas, was visiting in Houston last week.

J. E. CAWLEY, Mexican Gulf Oil Company, Tampico, Tamps, Mexico, was in Texas on business last week.

H. K. V. TOMPKINS, independent operator who formerly lived in Fort Worth, has moved to Houston.

HARUKICHI TAKAHASHI, petroleum engineer for the Nippon government, is visiting fields of the Gulf Coast and Mid-Continent. He was in Houston last week, gathering data on various methods for lifting oil.

Crude Control Encouraging

General market situation is relatively stable despite decline of gasoline tank car prices

ALTHOUGH the gasoline market continues weak, the over-all market situation of the oil industry appears fairly stable; and it is indicated that the industry may be able to reach the end of the year without suffering any further important declines of prices.

The weakness of the gasoline market naturally has tended to disturb the whole market situation of the industry. And, consequently, there have arisen fears that prices of other products and of crude oil might be forced down.

But so far there has not been any important weakening of prices in the industry, with the exception of gasoline prices.

Furthermore, it now is promised that price recessions may be confined to those affecting gasoline, and that the gasoline prices themselves may henceforth prove steadier.

Through the steady decline of the past six weeks, gasoline prices have been brought down to levels that are low in relation to crude oil prices; and many refiners are protesting that they no longer have opportunity to show profits on their operations unless crude oil prices are reduced.

But crude prices do not appear to be in any immediate danger of reduction, considering the strict control of production that now prevails and is in prospect.

The general market situation is made promising not only by the crude control program but also by various favorable factors in the present statistical situation.

Crude Control Strict

The crude oil market promises to remain steady for at least several more weeks, as it is assured that crude production will be in balance with demand in the meantime. Although it already was fairly satisfactory, the regulation of crude production last week was in prospect of further improvement. For the Texas Railroad Commission announced its intention of cutting the Texas allowable at least 70,000 barrels daily, November 16, following the scheduled state-wide proration hearing, November 15.

It now appears, consequently, that the Texas output of crude oil for November will be fairly close to the market demand. After announcing a relatively strict state allowable effective November 1, the railroad commission revised its schedule to permit increases totaling about 35,000 barrels daily. But apparently the commission soon realized that the increases would result in additions of crude to storage. Consequently, it decided to issue a new order for the middle of November. The mid-month order will be, therefore, in the nature of an emergency order. And it will assure an effective balancing of supply with demand during the month.

In the meantime, the other leading producing states are achieving relatively successful control of crude oil production. Consequently, for the United States as a whole, crude production is in satisfactory relation to market demand.

Crude Market Steady

Crude oil prices, in the meantime, have continued comparatively firm, except in local areas where production apparently has exceeded market requirement. In Ward County, West Texas, for instance, an actual crude price cut occurred. Wickett Refining Company, which purchases about 2500 barrels of crude oil daily, reduced its Ward County posting 10 cents a barrel below the price paid by major companies, effective November 8.

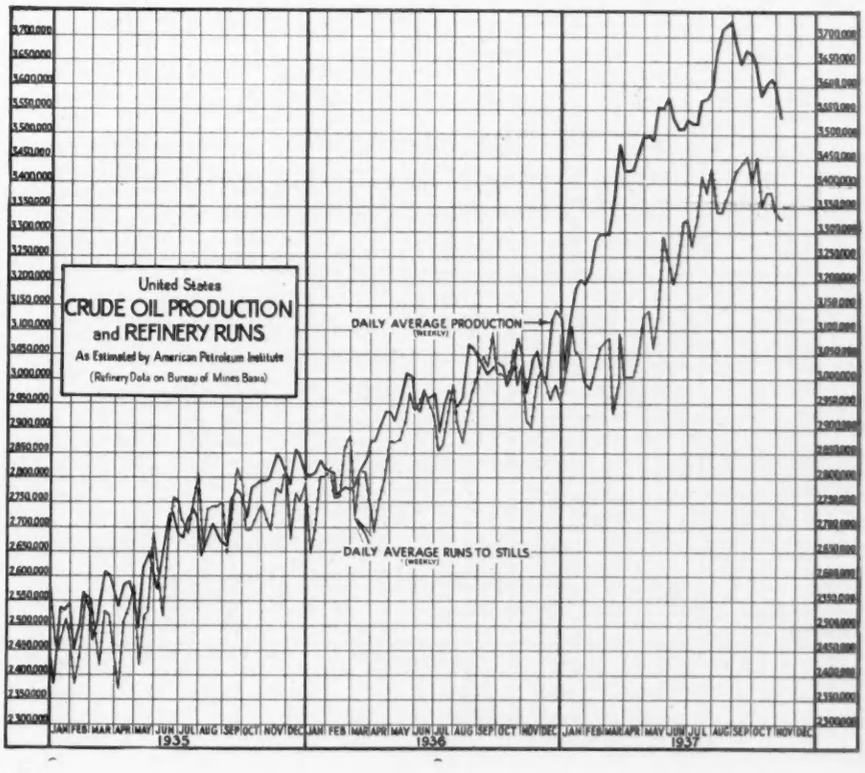
The market for Ward County crude has been relatively weak for several months. In September a major purchaser of crude in that area reduced its purchases ratably from all the leases with which it was connected.

While strict control of crude oil production is bolstering the crude market, the inventories of crude oil also are conducive to a firm market. The Bureau of Mines reported last week that crude oil stocks increased about one half million barrels in the week ended October 30, rising to 307,140,000 barrels. However, the crude stocks showed a net decrease for the whole month of October.

Despite the substantial additions to crude oil storage in the early months of this year, the crude stocks are relatively low in relation to demand. The present stocks are only 5.5 percent greater than those held one year ago, while the demand for petroleum is running more than 10 percent greater this year than last year.

Other Prices Steady

Like the market for crude oil, the markets for refined oils other than gasoline remain firm. The fuel oil market continues steady at established price levels, with demand strong. The fuel oil market undoubtedly is being bolstered by the relatively light inventories on hand. The fuel oil stocks were reduced about 150,000 barrels in the



week ended November 6. The present supply is about 7 percent greater than that held at this time last year. But, in the meantime, fuel oil demand has expanded about 10 percent.

Gasoline Market Weak

The gasoline market continues to mar the general situation, further declines of prices having occurred within the past week. At Oklahoma and Kansas refineries, for instance, prices last week were ⅛ cent a gallon lower than in the previous week, for all grades of gasoline.

Gasoline prices at Mid-Continent refineries have been steadily declining since late September, and in some instances they have lost as much as ¾ of a cent a gallon. In the Oklahoma market, for instance, third grade gasoline now is priced at 4¼ cents a gallon, compared with 5 cents in late September. The average tank car price for all grades and for country as a whole, however, has declined less than ⅜ cent a gallon and still is about ¼ cent higher than a year ago.

This remaining gain in prices over a year ago is not particularly comforting to refiners, however, as it hardly compensates them for the 10 percent increase in crude oil costs involved in the increases of crude oil postings last January.

Stocks Too Large

Declining prices of gasoline undoubtedly have resulted in part from surplus supplies. Gasoline storage has been steadily increasing since the beginning of October, while in previous years, additions did not commence until the middle of November, in anticipation of heavier demand of spring. In the week ended November 6, according to the American Petroleum Institute, gasoline inventories were increased another one-half million barrels, to a total of 67,271,000 barrels. That was about 15 percent more gasoline than the industry had on hand a year ago, while the gasoline demand is running only about 10 percent higher this year than last year.

Prices to Dealers Cut

Effective November 3, Standard Oil Company of Indiana reduced normal wholesale prices of all grades of motor gasoline to dealers, and also tank wagon prices to consumers, three-tenths of a cent a gallon in Michigan, Indiana, Illinois, Minnesota, Iowa, Missouri, Kansas, the Dakotas, and Wisconsin.

The reduction was made, officials stated, to meet competitive conditions.

Refinery Prices Lower

Tank car prices at Mid-Continent refineries late last week were generally ⅛ cent a gallon lower than in the previous week.

U. S. Motor gasoline ranged in the Oklahoma market about as follows: 62 octane and below, 4¼ to 4⅝ cents a gallon; 63 to 66 octane, 4⅝ to 5 cents; 67 to 69 octane, 5 to 5⅜ cents; and 70 to 72 octane, 5⅜ to 5¾.

Prices in the Chicago market ranged as follows: 62 octane and below, 4⅛ to 4½ cents; 63 to 67 octane, 4¾ to 5¼ cents; and 68 to 70 octane, 5⅛ to 5⅝ cents.

At East Texas refineries the most common product, 60-62, 400 end point gasoline, was priced from 4½ to 4⅝ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4 to 4¼ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅜ cents for the 42-44 water white grade. Corresponding prices in the Chicago market were: 4 to 4¼ cents and 4⅛ to 4⅜ cents.

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 50 in the issue of November 1. This schedule will appear only in the first issue of each month.

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	*83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 6, 1937	3,533,150	3,325,000	.....	67,271,000	120,925,000
November 7, 1936	2,973,800	2,920,000	†291,040,000	57,309,000	112,924,000
Change in past year	+18.8%	+13.8%	+5.5%	+17.3%	+7.0%

* All time peak.
† Stocks October 31, 1936.

Summary of Wells Completed in the United States Week Ending November 13, 1937

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1937	Total this Date 1936
Alabama	....	....	....	....	.....	1	2
Arkansas	8	7	....	1	3,715	120	81
California	27	20	....	7	10,470	1,307	993
Colorado	....	....	....	....	.....	17	14
Florida	....	....	....	....	.....	1	1
Illinois	9	6	....	3	2,629	295	4
Indiana	....	....	....	....	.....	122	160
Kansas	68	49	4	15	63,237	2,374	1,464
Kentucky	20	9	1	10	197	444	238
Louisiana	17	13	1	3	6,988	854	896
Michigan	12	6	....	6	1,015	836	683
Mississippi	1	....	....	1	.....	14	6
Montana	7	5	....	2	510	184	164
Nebraska	....	....	....	....	.....	....	1
New Mexico	7	6	1	....	3,737	603	497
New York	....	....	....	....	.....	21	.....
Ohio	28	7	8	13	26	1,298	1,699
Oklahoma	46	33	5	8	11,452	2,634	2,531
Pennsylvania	2	1	1	....	25	183	.....
Texas	302	250	13	39	392,702	13,379	10,986
Utah	....	....	....	....	.....	....	.....
West Virginia	16	5	9	2	13	814	548
Wyoming	2	2	....	....	575	96	76
Total this week.	572	419	43	110	497,291	25,597	21,044
Total last week.	614	425	60	129	479,935	....	.....
Total this year.	25,597	17,832	2,143	5,622	21,501,301	....	.....

Comparison of Permits Granted for New Wells

STATE	Week Ending Nov. 13	Total this Mo.	Total this Year	Total this Date Last Year	1936 Year Total
Arkansas.	4	13	226	86	103
California.	49	77	1,409	925	1,054
Louisiana.	16	48	1,116	990	1,107
Kansas...	44	83	2,445	1,609	1,873
Michigan.	17	40	868	643	762
Oklahoma	55	110	2,466	2,527	2,594
Texas....	412	612	15,610	13,234	15,582
Total..	597	983	24,140	20,014	23,075

Output Declines Again

Drop leaves national output still 32,025 barrels per day higher than U. S. Bureau of Mines recommendation.

STEADILY decreasing in the last few weeks, United States crude oil production showed a further decline during the week ended November 13, averaging 3,541,025 barrels daily, which was 15,775 barrels a day less than in the previous week, but still 32,025 barrels more than the Bureau of Mines recommendation.

Important States Down

The decline of the daily production in the past week resulted from decreases in Texas, Oklahoma and Louisiana, which greatly outweighed increases in California, Kansas and New Mexico.

Texas output was 10,200 barrels a day lower than the week before, averaging 1,435,400 barrels daily, which was 22,100 barrels a day more than the Bureau of Mines estimate of demand, and 83,723 barrels more than the state allowable.

Oklahoma likewise showed a drop of 25,800 barrels, averaging 556,575 barrels daily, which was 41,425 barrels a day less than the federal allocation and 18,425 less than the allowable prescribed by the state.

Louisiana production was down 2200 barrels below the previous week's level, in averaging 237,500 barrels a day, having been 8700 barrels daily below the Bureau of Mines estimate and 15,650 below the state allowable.

California Up

California showed an increase of 9000 barrels, averaging 702,000 barrels daily, which was 27,400 barrels a day more than the estimated demand and the recommendation of the Central Committee of California Oil Producers.

Kansas also increased its production to 193,300 barrels daily, which was 19,075 barrels a day more than in the previous week, 3600 barrels less than the Bureau of Mines recommendation and 13,085 less than the state allowable.

Crude postings reduced in West Texas fields

Wickett Pipe Line Company, independent purchaser of crude in South Ward and northern Pecos counties, reduced its gravity scale posted prices, effective November 8, 10 cents a barrel. The new schedule provides for a top posting of 98 cents per barrel for 40 gravity and above, with a 2-cent differential. The company supplies the Wickett Refining Company's skimming plant at Wickett, Texas, and handles about 80,000 barrels of crude monthly.

Petroleum products valued at $10,683,172 were among the nearly one-half billion dollars worth of materials, supplies and equipment purchased for projects of the Works Progress Administration in the 26 months of its operation

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Nov.)	State Allowable in November	BARRELS DAILY FOR WEEK ENDED	
			November 13	November 6
TEXAS—				
Texas Panhandle	.....	.....	73,800	74,100
North Texas	.....	.....	73,100	72,900
West Central Texas	.....	.....	34,700	34,600
West Texas	.....	.....	207,400	209,800
East Central Texas	.....	.....	110,200	110,300
East Texas Field	.....	.....	484,100	483,800
South Texas	.....	.....	250,300	261,300
Texas Gulf Coast	.....	.....	201,800	198,800
Total Texas	1,413,300	1,351,677	1,435,400	1,445,600
CALIFORNIA—				
Long Beach	.....	.....	58,000	58,300
Santa Fe Springs	.....	.....	41,500	41,500
Huntington Beach	.....	.....	38,500	37,000
Dominguez	.....	.....	29,500	28,500
Inglewood	.....	.....	16,000	16,000
Ventura Avenue	.....	.....	38,000	35,500
Seal Beach	.....	.....	8,900	8,700
Midway-Sunset	.....	.....	74,500	72,500
Elwood	.....	.....	8,300	8,500
Kettleman Hills	.....	.....	81,000	78,500
Mountain View	.....	.....	16,500	17,500
Playa del Rey	.....	.....	8,000	8,000
Wilmington	.....	.....	60,000	61,500
Others	.....	.....	223,300	207,200
Total California	674,600	*674,600	702,000	693,000
OKLAHOMA—				
Oklahoma City	.....	.....	114,050	147,275
Seminole Area	.....	.....	110,100	113,300
Crescent	.....	.....	8,150	7,825
Lucien	.....	.....	13,975	15,550
Fitts	.....	.....	79,425	69,650
Edmond	.....	.....	12,300	12,000
Moore	.....	.....	9,750	9,575
Others	.....	.....	208,825	207,200
Total Oklahoma	598,000	575,000	556,575	582,375
LOUISIANA—				
North Louisiana	.....	.....	70,100	72,300
South Louisiana	.....	.....	167,400	168,400
Total Louisiana	246,200	253,150	237,500	240,700
KANSAS—				
Ritz-Canton	.....	.....	4,825	4,775
Chase	.....	.....	8,025	6,125
Hollow-Nikkel	.....	.....	2,475	2,300
Sedgwick	.....	.....	3,625	3,700
Burrton-Haven	.....	.....	13,725	11,650
Lorraine	.....	.....	3,625	1,925
Russell County	.....	.....	34,850	35,400
Silica-Isern	.....	.....	17,175	12,150
Others	.....	.....	104,975	96,200
Total Kansas	189,700	180,215	193,300	174,225
NEW MEXICO	104,800	104,800	104,700	104,600
MICHIGAN	47,400	.....	54,900	53,880
ARKANSAS	33,100	.....	44,150	48,600
MOUNTAIN STATES—				
Wyoming	56,300	.....	56,800	58,300
Montana	17,100	.....	17,800	17,700
Colorado	4,500	.....	4,200	4,100
Total Rocky Mountain States	77,900	.....	78,800	80,100
EASTERN STATES—				
Pennsylvania Grade	.....	.....	76,800	78,500
Southern Illinois (New Pools)	.....	.....	18,500	16,800
Illinois-Indiana (Old Pools)	.....	.....	16,100	16,000
Others, Eastern	.....	.....	22,300	22,500
Total Eastern States	124,000	.....	133,700	133,800
Total United States	3,509,000	.....	3,541,025	3,556,800

*Recommendation of Central Committee of California Oil Producers.

IN THE

Financial Field

Most oil companies show improvement in earnings in reports covering third quarter and first 9 months of year

ALTHOUGH oil company stocks have suffered greatly this year along with the rest of the market, there have been, lately, reports of important buying of oil stocks by purchasers whose opinions are respected.

This buying has included purchases by individuals and investment companies, and it was rumored that important purchases were being made by various agencies representing the Rockefeller interests. Those interests, it will be recalled, openly and heavily supported the stock market in the break of 1929.

Other Industries Prosper

The Wall Street Journal recently published figures showing that 76 industrial concerns reported for the three months ended September 30, this year, 23 percent more profit than in the similar period last year.

It is indicated that the Atlantic Refining Company earned about 50 percent more profit in the September quarter of this year than in the similar period last year. For the three months ended September 30, this year, it is indicated that the company earned $4,049,244, or $1.46 a share on the common stock, compared with $3,023,809, or $1.08 a common share in the similar period last year.

The Ashland Oil & Refining Company, for the three months ended September 30, this year, reported net profit of $275,881, after usual deductions, the equivalent of 28 cents a share on the common stock, after dividends on the 5 percent preferred stock. For the nine months ended September 30, the company reported net profit of $561,483, after above charges and after flood losses in the early part of the year, equal to 57 cents a share on the common stock.

Phillips Profits Best Yet

Phillips Petroleum Company, for the first nine months of 1937, earned 54 percent more profit than in the similar period last year. The company's net profit in the nine months this year was $19,813,719; and the company was earning at a record rate. The greatest annual profit on record for the company was $21,407,709, earned in 1926. The fact that the company is earning this year more than ever before is based on the circumstances that crude oil production and sales of all products have been running this year at new record levels, while oil prices have been satisfactory.

In view of the favorable earnings this year, the directors of Phillips Petroleum Company have declared a dividend of 25 cents a share extra in addition to the usual quarterly dividend of 50 cents a share. These dividends will bring to a total of $2.75 a share the payments made by the company this year, compared with $2.50 a share paid out in all of 1936.

Frank Phillips, president of the Phillips Petroleum Company, declared that the recent decline in the stock market was bewildering, and unjustified in the case of the Phillips stock. He explained that the actual value of the Phillips Petroleum Company stock has been substantially increased by recent discoveries of additional reserves, by favorable earnings, and by increased volumes of business. He added that the statistical position of the oil industry is sound and that the industry usually is less affected in times of general depression or prosperity than most other industries.

The Phillips Petroleum Company's net profit of $19,813,719 for the first nine months of this year was the equivalent of $4.45 a share on the common stock, as compared with a profit of $12,834,905, or $3.08 a share on the common stock for the similar period of 1936.

The Phillips Petroleum Company, for the three months ended September 30, 1937, reported net profit of $7,134,638 after the usual deductions, which was equivalent to $1.60 a share on the capital stock. In the similar three months' period of last year, the company earned a profit of $5,498,603 or $1.31 a share.

Plymouth Shows Gains

The Plymouth Oil Company, in the first nine months of 1937, earned 67 percent more profit than in the similar period of last year.

Plymouth Oil Company and its subsidiary, Big Lake Oil Company, report for the nine months ended September 30, this year, a net income of $2,113,970, after usual deductions, equivalent to $2.01 a share on the capital stock. This compares with a profit of $1,266,298, or $1.20 a share in the first nine months of 1936.

For the three months ended September 30, 1937, the Plymouth Oil Company and its subsidiary reported net income of $750,974, or 71 cents a share, as compared with $722,677, or 69 cents a share in the preceding quarter, and $448,143, or 43 cents a share in the September quarter of last year.

Shell Union

The Shell Union Oil Company and subsidiaries are showing somewhat better profit this year than last year, having reported for the three months ended September 30, this year, a net profit of $7,503,291, or 54 cents a share on the common stock, after dividend requirements on 5½ percent preferred stock. In the corresponding period last year, the companies earned a profit of $7,210,230, or 51 cents a share.

For the nine months ended September 30, this year, the Shell Union Oil Company reported net profit of $15,984,218, equal to $1.11 a share on the common stock. In the similar period of last year, the company showed profit of $16,512,053, or $1.14 a share on the common stock, but that figure included $2,209,807 profit on sale of investment in an affiliated company.

The Superior Oil Corporation has been showing this year about 50 percent more profit than last year. The company has reported for the first nine months of 1937 a net profit of $308,109, equal to 22 cents a share on the common stock. This compares with $142,807, or 14 cents a share for the similar period of last year.

The Superior Oil Corporation reported for the three months ended September 30, 1937, a net profit of $171,418, after usual deductions, equivalent to 12 cents a share on the capital stock. That compared with a profit of $94,524, or 7 cents a share in the preceding quarter, and with $26,487, or 3 cents a share in the September quarter of last year.

Tide Water Does Well

The profits of Tide Water Associated Oil Company have been running this year well above last year. In the nine months ended September 30, this year, the company reported net income of $12,171,435. The earnings applicable to the common stock, after the preferred stock dividend requirement of $1,973,641, amounted to $10,197,794, or $1.61 a share on the average number of shares outstanding during the period. In the first nine months of 1936, the net income applicable to the common stock was $5,686,939, or 99 cents a share. Thus, the profit per common share in the first nine months of this year was 63 percent greater than the profit in the similar period last year.

The Tide Water Associated Oil Company reported for the three months ended September 30, 1937, a net profit of $4,474,733. After a deduction of $562,500 for dividends on the preferred stock, the remaining net income applicable to the common stock amounted to $3,912,233, or 62 cents a share.

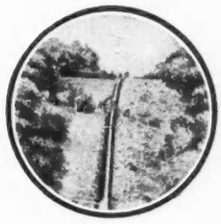
The greater profits of Tide Water Associated Oil Company this year reflect increases in crude oil production and in sales of petroleum products. The company's production this year has been running 11.5 percent greater than last year. And for the first nine months of this year, the company showed an increase of 20 percent over the similar period last year in the total sales of crude oil, fuel oil, gasoline, and other products, because of an increase in sales volume and an increase also in unit realizations.

Oklahoma Natural Gas Company and subsidiaries, for the 12 months ended September 30, 1937, reported net income of $1,503,150, after usual deductions. This compared with a profit of $834,337 in the 12 months ended September 30, 1936.

For the first nine months of 1937, Lion Oil Refining Company had 85 percent more gross crude oil production than in the similar period last year. For September, the company had 117 percent more crude production than in the similar month last year. Partially accounting for the large gains this year over last year was the fact that Lion Oil Refining Company, in the meantime, has acquired producing properties from E. L. Smith Oil Company, through the purchase of the majority of the stock of the Smith company.

The Lion Oil Refining Company, in the first nine months of 1937, sold 22 percent more gasoline than in the similar period of 1936.

PIPE LINE NEWS



Would build short line to Saginaw and Bay City

Gas Corporation of Michigan seeks authority to construct a 13-mile pipe line to the line of Consumers Power Company running to Saginaw and Bay City to enable the company to borrow 100,000,000 cubic feet of gas from the Consumers Company, needed to supplement its present resources for service to customers in Mount Pleasant, Clare and Rosebush, Michigan.

Henry Gellert, vice president of the Gas Corporation, told the Michigan Utilities Commission last week that Pure Oil Company is prepared to establish a plant to treat the casinghead gas from its several hundred oil wells in the Isabella County fields to make it safe for fuel uses. The Gas Corporation would undertake experiments with this gas with a view to using it to supplement its present inadequate supplies if the temporary measure is approved.

Casinghead gas in the Sherman Township fields, estimated at 2,000,000,000 cubic feet, is now generally piped to a torch beside the well and burned away as useless, Gellert said, adding that gasoline extracted from it would have a value of $150,000.

Imperial running line from Turner Valley leases

Imperial Oil Company, Ltd., is constructing a 10-inch pipe line from South Turner Valley, Alberta, Canada, to its absorption plant, a distance of about 2 miles. The line will carry casinghead gas from large producers recently completed in that area to the plant for processing. It is being built to the Davies Petroleums' No. 2 site and will have feeder lines conecting it with other producers.

Try to reverse governor's attitude and end delay

Pennsylvania natural gas interests seeking to extend natural gas lines from north Pennsylvania fields to Philadelphia, who were told a week ago that the administration of Governor George H. Earle would not approve the project until problems of the state's coal industry were solved, last week informally conferred with the Pennsylvania Public Utilities Commission in an effort to bring a reversal of the administration's attitude.

Philadelphia's city-owned gas plant is being operated by the United Gas Improvement Company under a lease which expires December 31. Gas manufactured from coal is distributed.

North Pennsylvania producers have a sufficient supply of gas tapped to supply Philadelphia for six years and expect to increase their present 54,000,000,000 cubic feet potential, it is claimed.

Eliminate unprofitable lines in North Oklahoma

To effect elimination of lines being unprofitably operated by the Stanolind Pipe Line Company and Sinclair Prairie Pipe Line Company, plans are under way to switch lines south of Childers, eastern Nowata County, Oklahoma, now operated by Sinclair Prairie, and lines near Bristow, Oklahoma, now operated by Stanolind.

Crude oil stocks show decline in September

The monthly petroleum report of the Bureau of Mines covering September shows that crude oil runs to stills rose to a new high mark of 3,450,000 barrels daily, or 55,000 barrels more than in August. Meanwhile crude production declined to 3,666,000 barrels daily, or 46,600 barrels less than in August, although 21 percent more than in September, 1936.

Increased runs in the face of declining production were explained by the trend of crude stocks, which changed from an increase in August to a decline of 1,181,000 barrels in September.

Total gasoline demand in September was 10 percent higher than in that month last year, but relatively large exports were partially responsible, as domestic demand was up only 6.5 percent.

Supply and Demand of All Oils

(Thousands of barrels of 42 gallons)

From Monthly Report of Bureau of Mines, on Petroleum

	Sept. 1937	August, 1937	Sept., 1936	January–September 1937	January–September 1936
New Supply:					
Domestic production:					
Crude petroleum	109,980	115,090	90,972	955,957	814,051
Daily average	3,666	3,713	3,032	3,502	2,971
Natural gasoline	4,272	4,237	3,584	35,610	30,430
Benzol[1]	256	265	216	2,228	1,833
Total production	114,508	119,592	94,772	993,795	846,314
Daily average	3,817	3,858	3,159	3,640	3,089
Imports[2]					
Crude petroleum:					
Receipts in bond	187	284	220	1,482	1,853
Receipts for domestic use	2,164	2,661	2,624	18,750	22,149
Refined products:					
Receipts in bond	2,464	[3]2,429	1,764	17,735	13,385
Receipts for domestic use	433	[3]390	595	5,983	4,663
Total new supply, all oils	119,756	125,356	99,975	1,037,745	888,364
Daily average	3,992	4,044	3,333	3,801	3,242
Decrease in stocks, all oils	688	[4]5,879	9,686	[4]40,193	9,220
Demand:					
Total demand	120,444	119,477	109,661	997,552	897,584
Daily average	4,015	3,854	3,655	3,654	3,276
Exports:					
Crude petroleum	6,602	7,423	5,025	48,833	37,665
Refined products	10,346	10,352	6,785	78,823	58,867
Domestic demand:					
Motor fuel	47,245	49,597	44,346	391,276	358,026
Kerosene	4,397	3,667	4,305	37,841	36,018
Gas oil and distillate fuels	9,482	7,197	8,238	80,763	69,459
Residual fuel oils	26,544	26,259	25,913	243,897	225,004
Lubricants	1,968	1,924	2,059	17,876	17,006
Wax	82	84	80	806	799
Coke	586	476	529	4,206	4,598
Asphalt	3,009	2,783	2,974	18,345	16,911
Road oil	1,068	1,590	1,108	7,044	6,501
Still gas	5,369	5,653	4,743	46,298	40,727
Miscellaneous	218	180	215	1,756	1,704
Losses	3,528	2,292	3,341	19,788	24,299
Total domestic demand	103,496	101,702	97,851	869,896	801,052
Daily average	3,450	3,281	3,262	3,186	2,924
Stocks:					
Crude petroleum	309,742	310,923	295,693	309,742	295,693
Natural gasoline	6,278	7,041	4,945	6,278	4,945
Refined products	242,819	241,563	231,842	242,819	231,842
Total, all oils	558,839	559,527	532,480	558,839	532,480
Days' supply	139	145	146	153	163

[1] From Coal Division. [2] Imports of crude as reported to Bureau of Mines; all other imports and exports, from Bureau of Foreign and Domestic Commerce. [3] Revised. [4] Increase.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Outlook Brightens

Reduction in freight rates will allow Turner Valley producers to expand market; field busy

A REDUCTION in freight rates on five-car shipments to Winnipeg which will enable producers in the Turner Valley field of Alberta, Canada, to compete with crude shipped to that point from Montana and other United States fields was the week's most encouraging development pointing toward solution of the serious marketing problem facing Canadian crude producers.

The new rate, set at 39 cents per cwt., will make it possible for Turner Valley producers to lay down oil in the extensive Winnipeg market at a cost lower than that afforded by producers across the International boundary now supplying that area. Operators of the North Star Refinery at Winnipeg have agreed to end their commitments for United States crude at the end of November. This will immediately add a potential market of 2000 barrels daily, with expansion of the North Star plant considered possible.

The Winipeg market, when fully developed, is capable of absorbing excess Turner Valley production, at present set at about 12,000 barrels daily. According to present indications, however, the potential of the field will increase more rapidly than development of the Winnipeg market, and additional outlets will have to be sought if present proration of 45 percent of potential is to be lifted or eased.

Model Oils, Ltd., Spooner Oils, Ltd., and Reward Oils, Ltd., joint sponsors of the Model-Spooner-Reward test recetnly completed on Legal Subdivision 4, Section 28, Township 18, 2-w5, with initial production of 600 barrels daily, will drill a second Turner Valley test on the south half of Legal Subdivision 1, Section 29, Township 18, 2-w5, acreage previously held by National Petroleum Corporation, Ltd.

Anglo-Canadian Development & Holding Company, Ltd., completed its Firestone well during the week and immediately announced location for another test on Legal Subdivision 15, Section 17, Township 18, 2-w5, acreage held by Calgary & Edmonton Corporation. Firestone stopped drilling at 5713 feet, 359 feet in the lime. A production test has not yet been made, but the initial is estimated at 500 barrels daily before acidization.

Twenty-two wells are drilling in Turner Valley, exclusive of those standing cemented and those with rigs temporarily idle.

Birch Ridge Promising

On the Birch Ridge structure, Elbow Oil Company's wildcat, Legal Subdivision 11, Section 35, Township 22, 5-w5, was drilling at 5240 feet, believed from 200 to 300 feet from productive horizons. It is recognized as one of the most promising Alberta wildcats and would throw open a large area to development. The test is strongly backed by English capital. The company has large holdings on the structure, which indicates a possible territory of more than 18 square miles. Several gas seepages were encountered, indicating the presence of oil. Now on top of the Fernie shales, a heavy gas pressure is slowing up drilling operations. Production is expected in the brown sand of the Fernie formation.

Canadian Wildcats

The following reports were received from West Canadian wildcat structures: On Calling Valley, Sentinel Oils, drilling at 5902 feet; Anglo-Indian Oils Corporation, derrick; on Cardston, Franco Oils, cleaning at 4580 feet; on Clearwater, Western Development Company, temporarily idle at 142 feet; on Del Bonita, Lyons-McIntyre, drilling at 450 feet; on Duncan, Spindletop Oils, drilling at 2392 feet; on High River-Aldersyde, Ranchmen's Oil Company, waiting at 7225 feet; on Highwood-Sinclair, Green Valley Petroleums' Banner 1, drilling at 4185 feet; on Hunter Valley, Hunter Valley Oil Company, testing at 8274 feet; on Kootenay Dome, Roxana Petroleums, drilling at 3690 feet; on Lethbridge, Lethbridge Petroleum & Refineries No. 1, cemented at 2198 feet; on Moose Dome, Moose Oils' No. 2, testing at 1553 feet; Model Oils, rigging up; on New Valley, New Valley Oil Company, fishing at 8462 feet; on Pincher Creek, Weymarn Petroleums' No. 2, waiting at 6432 feet; on Ribstone, Dina Oil & Refining Company's No. 4, drilling at 1023 feet; London-Ribstone Petroleums' No. 2, testing with no depth reported; on Steveville, Anaconda Oil Company, drilling at 1192 feet; on Taber, Plains Petroleum Corporation's No. 3, drilling at 2850 feet; Amerada Oil Company, hauling to location; on Wainwright, Altoba Oils, derrick; Battleview Oils, testing at 1894 feet; on Watson, Mar Jon Oil Company's No. 3, changing from cable to rotary at 5530 feet; No. 5, cellar; Mar Jon-Maxmont Syndicate, drilling with no depth reported; on Sage Creek in British Columbia, Columbia Oils, drilling at 6050 feet.

Mexican government gets gasser near Nuevo Laredo

Gas production was obtained in the Mexican government's first exploration just southwest of Nuevo Laredo in the State of Tamaulipas, Mexico, about 8 miles from the United States border The well is Administracion de Petroleo Nacional's Petro-Mex 1, located by beginning at the northwest corner of Los Ejidos, thence south along the west line 11,755 feet, thence west at right angles 4900 feet.

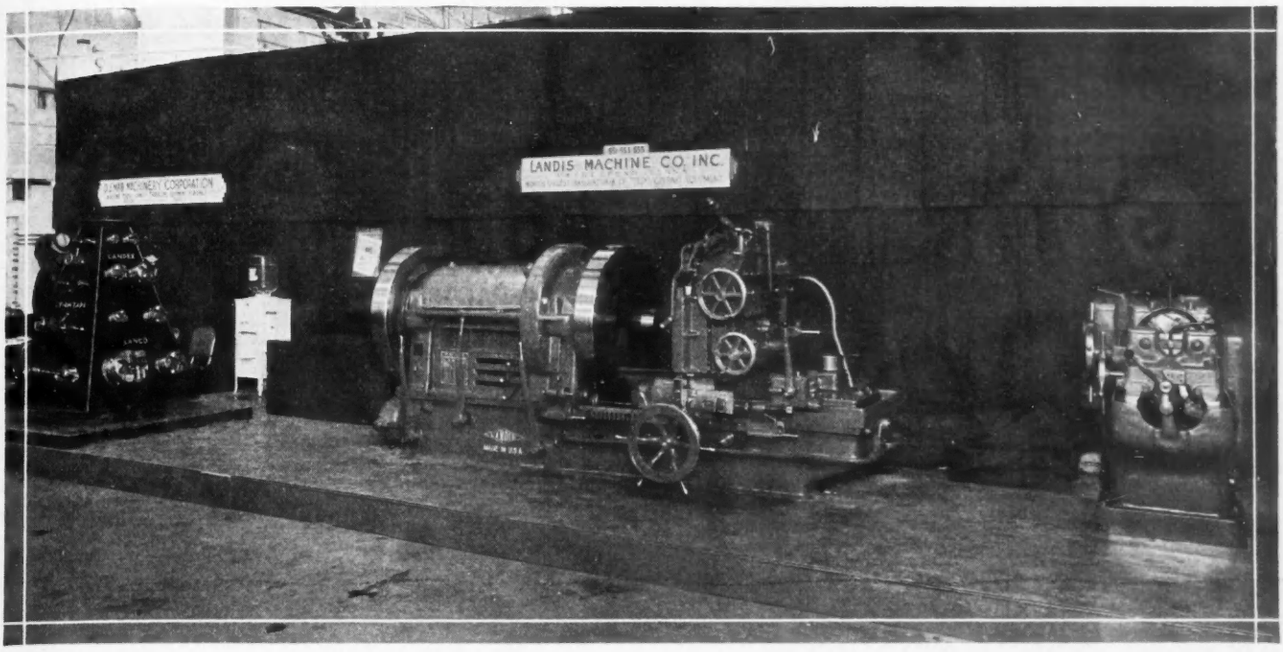
The well was drilled to 2570 feet, after which electric formation tester was run and 7-inch casing landed at 710 feet, being perforated at 681-90 feet with 30 shots. The well made an estimated 2,500,000 cubic feet of gas with 300 pounds rock pressure.

Records on the well show that a drill stem test at 681-96 feet through ⅜-inch choke rocked up pressure of 300 pounds in 5 minutes. A sand showing oil was found at 1002-22 feet but a drill stem test recovered water. Another drill stem test at 1325-1465 feet through ⅜-inch choke recovered 1110 feet of mud and salt water with 40 pounds working pressure in 20 minutes.

International obtains big concession in Ecuador

Negotiations for oil exploration on approximately 500,000 acres along the seacoast of Ecuador have been completed by International Petroleum Company, Ltd., officers of the company announced in Toronto, Canada, last week. The

At the Oil Show



The Oil World saw this *ultra-modern* THREAD CUTTING EQUIPMENT for modern production methods

The LANDIS Machine Company manufacture a complete line of Thread Cutting Die Heads and Machines for use in the manufacture of oil field products and for use in the oil industry.

Refineries have found LANDIS Pipe Threading Machines are unexcelled for pipe maintenance operations, and in the field Casing, Tubing, and Drill Pipe are threaded with the confidence of knowing the thread is accurately tapered, well formed and of a quality that is necessary for tight leak-proof joints.

Manufacturers of oil field products use LANDIS because they recognize the **Efficiency** of LANDIS Die Heads and Threading Machines, and the **Economy** of the LANDIS patented Tangential Chaser.

May we tell you more about LANDIS Threading equipment? Write us today.

LANDIS MACHINE COMPANY, Inc.

Waynesboro, Penna.

company's present major sources of crude are Peru and Colombia.

During 1936, International Petroleum Company produced 18,756,000 barrels of crude from its Colombian holdings, and 15,126,000 barrels from its holdings in Peru. Location of the Ecuador concessions on the seacoast will place the company in an excellent marketing position if production is obtained.

Early this year the company announced it had acquired a substantial interest in the National Carare Company, and in return had undertaken to explore for oil in the territory covered by leases held by that company. The area is approximately 38,000 acres, located in the State of South Santander, Colombia, not far from the de Mares concession now being operated by International Petroleum Company.

"Officers"

[*Continued from page 18*]

California, San Francisco; Mexico and South America, H. Wilkinson, Asiatic Petroleum Corporation, New York.

Natural Gas Group: T. B. Gregory, Manufacturers Light & Heat Company, Pittsburgh, Pa.

Natural (Casinghead) Gasoline Group: D. E. Buchanan, Hanlon-Buchanan, Inc., Tulsa, Okla.

At-Large Group: (Elected by Members) F. R. Coates, Cities Service Company, New York; J. D. Collett, OKeefe & Collett, Fort Worth; W. N. Davis, Foster and Davis, Bartlesville; E. J. Henry, Atlantic Refining Company, Philadelphia; R. C. Holmes, Shinglehouse, Pa.; H. T. Klein, The Texas Company, New York; F. A. Leovy, Gulf Oil Corporation, Pittsburgh; J. F. Lucey, Lucey Petroleum Company, Dallas, Texas; E. W. Marland, Oklahoma City, Okla.; E. B. Reeser, Barnsdall Oil Company, Tulsa; H. F. Sinclair, Consolidated Oil Corporation, New York; J. W. Van Dyke, The Atlantic Refining Company, Philadelphia; and H. C. Weiss, Humble Oil & Refining Company, Houston, Texas.

The following members of the At-Large group were reelected by the Board of Directors: C. E. Arnott, Socony-Vacuum Oil Company, Inc., New York; Paul G. Blazer, Ashland Refining Company, Ashland, Ky.; E. DeGolyer, Felmont Corporation, Houston; J. Frank Drake, Gulf Oil Corporation, Pittsburgh; W. S. Fitzpatrick, Consolidated Oil Corporation, New York; N. V. V. Franchot, D. W. Franchot & Company, Olean, New York; Alexander Fraser, Shell Petroleum Corporation, St. Louis, Mo.; Jake L. Hamon, Cox & Hamon, Dallas; Robert H. Colley, Atlantic Refining Company, Philadelphia; A. Jacobsen, Amerada Petroleum Corporation, New York; B. L. Majewski, Deep Rock Oil Corporation, Chicago; T. A. O'Donnell, Los Angeles; W. S. S. Rodgers, The Texas Company, New York; and E. L. Smith, Dallas.

Twenty members of the general committee of the Division of Production were elected and five additional members were appointed by President Byles at the closing session.

Following are those elected:

A. W. Ambrose, Cities Service Company, Bartlesville; A. B. Blow, Amerada Petroleum Corporation, Tulsa; C. Bunje, Jr., Illinois Pipe Line Company, Findlay; H. D. Atha, Gordon Oil Company, Mt. Pleasant, Michigan; W. L. Connelly, Sinclair Prairie Oil Company, Tulsa; C. P. Dimit, Phillips Petroleum Company, Bartlesville; L. E. Barrows, The Texas Company, Houston; Raymond B. Kelly, Pure Oil Company, Fort Worth; F. W. Floyd, Carter Oil Company, Tulsa; and M. E. Lombardi, Standard Oil Company of California, San Francisco.

Also elected on the committees were: W. L. McLaine, General Petroleum Corporation of California, Los Angeles; W. M. O'Connor, Atlantic Refining Company, Philadelphia; E. H. Sarlin, Tide Water Associated Oil Company, Houston; F. O. Prior, Stanolind Oil & Gas Company, Tulsa; A. C. Rubel, Union Oil Company of California, Los Angeles; J. H. Russell, Gulf Oil Corporation, Houston; J. G. Dyer, Continental Oil Company, Ponca City; J. R. Suman, Humble Oil & Refining Company, Houston; A. J. Galloway, Shell Petroleum Corporation, Houston, and J. T. Hayward, Barnsdall Oil Company, Tulsa.

Appointed by the president were: O. D. Donnell, Ohio Oil Company, Findlay; C. H. Kountz, Sinclair Refining Company, Independence, Kansas; R. B. Lloyd, Los Angeles; J. Edgar Pew, Sun Oil Company, Philadelphia; and John M. Lovejoy, Seaboard Oil Corporation of Delaware, New York.

General Sessions

[*Continued from page 17*]

Hours bill and the Bierman bill, which would divorce pipe lines from producing and refining companies. He said the Connally act should be made a piece of permanent legislation.

Disney on Depletion

The depletion allowance in behalf of industries such as oil and mining was classed as a constitutional right by the Honorable Wesley E. Disney, congressman from the first district of Oklahoma, who spoke Thursday afternoon. Congressman Disney, a member of the sub-committee of the house ways and means committee, said his group is studying the capital gains tax and cited figures to show that returns from it are unsatisfactory. He dealt at length with depletion and its application to the oil industry as well as the court decisions that have touched the subject of depletion and said:

"It would seem to be sound reasoning, from the various decisions of the courts, as well as inherent judgment, that any attempt of congress to abandon depletion or its equivalent, would be in violation of the constitutional rights of the taxpayer. Change, of course, could be made to assist in the process of taxation or in the rates. An unreasonable discrimination, say in the form of a rule or a rate, which would result in the impairment of capital under the guise of an income tax, would conflict with constitutional authority."

Dr. H. E. Howe, editor of Industrial and Engineering Chemistry, Washington, was the third speaker of the final general session. He dealt at length with the accomplishments of scientific research in the search for oil, its production and its manufacture. He classed availability of the aliphatic hydrocarbon as one of the outstanding accomplishments of the industry and said "an aliphatic chemical industry may be built up which may rival in importance the aromatic chemical industry of which the products derived from coal tar are outstanding examples."

Court rules owner must pay taxes on oil lands

[*Continued from page 11*]

barrels. He maintained that his interest in the oil produced was only one-eighth, the remaining seven-eighths being held by various other parties.

Noting that the tax "assessment is not based on the value of the oil in place, but on the amount of oil produced daily," Judge McCracken took cognizance of legal controversies existing over the question of taxation of mineral properties.

Ruling Against Land Owner

"We cannot," Judge McCracken said, "grant the relief sought, for the reasons that (1) there is a well-established and generally recognized custom in the oil region that in the absence of any agreement to the contrary, taxes are assessed and payable by the owner of the land, or lessor; (2) a change in the general concept of the legal status of the lessor and lessee at this late date would jeopardize and, in many cases, destroy large vested interests and valuable rights; (3) third parties, strangers to the original lease, have not acquired rights relying upon a status created by the acts, conduct and acquiescence of the petitioner and his immediate predecessor in title; (4) by gradual development, an oil and gas lease has by common consent and practice been clothed with many of the incidents and attributes of personality and as such is not assessable as real estate; (5) to shift an obligation acknowledged by the petitioner and the former owners of the oil right to another would be inequitable and unjust and permit the petitioner to enjoy an undeserved benefit."

Arguments are opened in California case

Arguments were opened at Fresno, California, last week in the $22,000,000 title suit of the government vs. Standard Oil Company of California for possession of a section of land in the famous Elk Hill district, Kern County. It was questioned whether the evidence was sufficient to sustain a decision of Secretary of the Interior Ickes in upholding the government's claim to the property and to damages, which the government contends amount to $7,868,868.

The government claims the section was proven mineral land in 1903, when private owners received title to it from the State of California. The state had obtained title from the federal government under the condition the lands were not mineral bearing.

OKLAHOMA FIELDS

Hughes County test promises to open new field.

* * *

Encouragement given in Fox pool deep drilling.

* * *

Billings southeast edge well near completion.

Tulsa.—Most interesting test in Oklahoma last week was Phillips Petroleum Company's Becker 1, NE NW SW 8-5n-10e, in south-central Hughes County, which shows promise of opening a new pool for the Sooner state within the next week or ten days. Outlook was also improved at a closely followed wildcat in Coal County; but the rest of the state had slowed considerably as the week drew to a close.

Becker 1, southeast of Calvin about four miles, had the Cromwell sand from 4399 to 4455 feet and flowed an average of 13 barrels of oil per hour with an estimated 18,000,000 cubic feet of gas. A core of the formation was taken from 4450 to 4455 feet, and between 4452 and 4455 feet, it softened. It was shut in to erect tankage.

The other interesting test was Carter Oil Company et al's Claytor 1, CWL NE SW 27-2n-9e, in the Centrahoma area of Coal County, which drilled to a total depth of 6355 feet. During a 5-hour swabbing test it made 98 barrels of oil. Shut down overnight, the well was opened and had filled 4500 feet with oil.

An unexpected shallow producer was reported from just west of Holdenville in Hughes County. Well was Shepherd and Thomas' Ball 1, NE SW SE 12-7n-8e, which had top of the Calvin sand at 1021 feet and had 100 feet of oil in the hole. Located one-half mile west of the business district of the city, the well was running 30 feet higher than any other Calvin sand production in the area.

West of Scipio in Pittsburg County, Phillips Petroleum Company's Gilcrease 1, NWc SE 16-7n-12e, topped the first Wilcox sand at 5364 feet and cored in tight sand from 5365 to 5368 feet with no show of oil or water. It was drilling ahead looking for the second Wilcox sand.

Sinclair Prairie Oil Company's Rogers 1, CWL NE SE 1-1n-7e, in the Jesse pool of Pontotoc County, topped Hunton lime at 3898 feet and drilled to 4282 feet where it was acidized with 5000 gallons and given an oil load of 170 barrels. In the first hour opened it flowed 170 barrels of oil through casing and in another hour flowed 105 barrels of oil net, through casing. Two and one-half inch tubing was set at 3865 feet and the well was shut in.

Carter Oil Company and Gulf Oil Corporation's Wells 1, SEc NW 2-1n-7e, had Hunton lime at 3852 feet and was bottomed at 4128 feet where it flowed 150 barrels of oil in eight hours through casing. During the following eight hours it flowed 447 barrels of oil, also through casing, and while pulling tubing, flowed 100 barrels of oil, producing from the lower Hunton lime. The 2½-inch tubing was set at 4032 feet.

Carter and Gulf's Wells 2, SWc NW 2-1n-7e, topped Hunton lime at 3837 feet and at a total depth of 3841 feet was waiting on cement after setting seven-inch casing at 3835 feet.

Continental Oil Company's E. Brown 1, NEc NW 11-1n-7e, was reacidized with 5000 gallons and given a 330-barrel oil load and swabbed 75 barrels of oil, net, during the four swabbing periods.

Carter Oil Company made location for a new test in the field, it being Madeline Thompson 1, CW½ SW NW 1-1n-7e.

Stanolind Oil & Gas Company, Amerada Petroleum Corporation and Mid-Continent Petroleum Corporation's Salina 1, SE NE NW 4-5n-6e, south of the Konawa pool in Seminole County, perforated with 90 holes between 3025 and 3040 feet. It was acidized first with 1000 gallons and later with 3000 gallons, following which it swabbed 119 barrels of oil, net, in 18 hours, production coming from the Hunton lime. It was making 37 gravity oil.

In Hughes County again, a well is reported as being a "mystery." The test is Pure Oil Company's Rogers 1, SEc NE 18-8n-12e, just east of Carson. It is stated the well is running some 400 feet higher on a subsurface contour and has possibilities as a pool opener along the southeast flank of production in the state. Top of the Viola lime was found at 4385 feet and was cored ahead into the dolomitic section above the Wilcox, this being basis for claiming commercial production may be present. It is five miles north of the Lamar pool.

Index to Field Development News

Area	Page
Arkansas	74
California	80
Eastern States	77
Kansas	64
Louisiana Coast	72
North Louisiana	73
Michigan	78
New Mexico	75
Oklahoma	63
Rocky Mountains	76
Southeastern States	74
East Texas	67
Texas Gulf Coast	72
West and North Texas	65
Southwest Texas	70
Wildcat Drilling Report	81

Week brings total of 46 completions

Tulsa.—Oklahoma completed 46 wells last week, 33 of them for oil with an initial production of 11,452 barrels of oil. There were five gas wells producing 20,800,000 cubic feet of gas and eight dry holes to round out the week. Of the 55 first reports, exactly the number started the week before, eight were in Pontotoc County. Seminole and Creek counties reported six each; Okmulgee 5; Carter 4; Okfuskee and Pottawatomie 3; Jefferson, Kay, Lincoln, Noble and Muskogee 2 each, and there was 1 apiece for Caddo, Grant, Hughes and Payne counties.

OKLAHOMA Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
CADDO COUNTY—		
Magnolia, Medrano 7, nw nw sw 36-6n-10w	140	4662
CARTER COUNTY—		
Samedan Oil Co., Thomas 2, sw se nw 7-2s-2w	57	2600
Lesh Bros. Oil Co., Laura E. Carson 1, sw sw se 18-3s-2w	*	340
Kewanee Oil, Jones 39, sw se nw 4-4s-3w	6	1159
Sinclair Prairie, Holeman 14, se se ne nw 16-4s-3w	22	1268
GARVIN COUNTY—		
Patsey Oil, Derdyn 2, sw sw se se 17-1n-3w, pb 1800 ft.	22	3803
Skelly Oil Co., Gross 4, sw ne sw 32-1n-3w	221	2905
CREEK COUNTY—		
Sand Springs Home, T. Atkins 30, sw sw nw ne 5-18n-7e	62	2600
Johnson Oil Ref. Co., Brozell 1, se sw sw 31-19n-10e, pb 2300 ft.	15	2681
L. B. Jackson, Wells 6, sw sw nw 26-18n-8e	50	2619
G. E. Marble, Emmons 1, sw ne ne 13-19n-7e	35	2500
HUGHES COUNTY—		
Amerado, Stewart 4, nw nw sw 31-9n-9e	16	4031
McGee, Taylor 3, sw nw nw 12-9n-10e	*	1186
Taylor 4, ne nw nw 12-9n-10e	*	562
LINCOLN COUNTY—		
Sun Oil Co., Arinwine 4, sw sw se 35-15n-2e	250	5083
LOGAN COUNTY—		
Champlin Ref. Co., Pfeiffer 5, ne nw nw 4-19n-2w	4538	5043
NOBLE COUNTY—		
Phillips & Shell, O'Neil 6, ne sw se 16-23n-2w	3658	4305
Continental Oil Co., Conwaoy 11, se nw nw 21-23n-2w	174	4316
Midco Oil Co., Hern C. 1, nw sw nw 27-23n-2w	*	4629
OKFUSKEE COUNTY—		
Robin Oil Co., Tixico 1, ne se sw 25-10n-10e	¶4.8	2740
Hays & Scruggs, Kennedy 1, nw nw se 21-10n-11e	2	2540
OKMULGEE COUNTY—		
Harmon, Mitchell 8, se ne nw 20-12n-12e	8	1905
Shock, Fields 4, ne ne nw 16-14n-11e	275	2418
Acme, Taylor 1, ne sw sw 20-14n-11e	*	2492
J. Moore, Jones 2A, nw nw ne 14-14n-13e	¶2	1773
Allen et al, Fish 1A, sw ne se 25-16n-11e	10	1761
OSAGE COUNTY—		
I.T.I.O., 447 se ne ne 16-26n-12e.	¶4.5	1770
PAWNEE COUNTY—		
J. L. Reynolds et al, Mayfield 9, nw nw se 11-20n-8e	*	1007
PAYNE COUNTY—		
Deep Rock Oil Corp., Shannon 5 c se sw 23-18n-3e, pb 1545 ft.	¶4.5	2889
PONTOTOC COUNTY—		
Stahl, Dennis 30, sw se sw 21-2n-7e.	100	2645

[Continued on next page]

Company, Well and Location	Init. Prod. Bbls.	Depth
Getty, Masters 5, nw se nw 23-2n-7e.	120	3968
Moore, Frazier 2, se nw nw 23-2n-7e, otd 3949 ft	12	4140
Simpson, Wooley 6B, nw nw sw 27-2n-7e	150	2493
Crusaders, B. Wooley 2, ne nw se 28-2n-7e	100	2504
Magnolia, Simpson 25, se se ne 29-2n-7e	¶5	1550
Simpson 26, ne ne ne 29-2n-7e...	220	2642
Moore, Harper 5, sw nw ne 29-2n-7e, otd 2750 ft.	63	3750
Schauers 1B, nw nw sw nw 29-2n-7e, pb 2702 ft.	85	3655
Boetcher, Richardson 1, se nw ne 25-4n-7e	*	4329
POTTAWATOMIE COUNTY—		
Magnolia, B. M. Green 3, nw sw nw 13-7n-4e	503	3147
E. W. Jones, Hedrick 1, nw ne nw 5-8n-3e	*	5278
Wood, Fleet 1, sw se nw 12-5n-7e..	*	4333
SEMINOLE COUNTY—		
J. F. Smith, Norvell 1, nw se ne 32-7n-6e	358	2990
Devonian, Whitworth 1, se sw nw 27-7n-7e	*	2675
Sun Oil, Letka 1, se nw sw 35-11n-5e	165	4602
STEPHENS COUNTY—		
Gulf, Sims 13, se se nw 13-2s-4w...	9½	402
Carter & Ring, Arn 14, ne nw nw ne 26-1s-5w	2½	414
TILLMAN COUNTY—		
Gulf Oil Corp., Sarah Pritchard 1, se nw se 32-3s-16w	*	5715
TULSA COUNTY—		
Wright-Kunkle, Parnosky 7A, se ne ne se 34-17n-14e	3	1645

*Failures; †Junked; ¶Million cu. ft. gas.

Important developments in southern Oklahoma

Ardmore.—Important developments are due to take place in the southern part of Oklahoma at an early date, with encouraging reports coming from the efforts of operators to find the deeper production in the old Fox pool of Carter County. At present, limelight shines on Gulf Oil Corporation's Johnson 1, CSW NW 27-2s-3w, which reported an increase in oil showings in cores. The well had top of the Oil Creek sand at 7830 feet and at 7845 feet went into Oolitic lime. A core from 7870 to 7887 feet had a two-foot recovery consisting of lime with a show of oil and gas, and another core between 7887 and 7897 feet had the same recovery with the same results. The oil showing in the last two cores has increased considerably over previous cores according to reports from the area. It was preparing to core ahead from the total depth of 7897 feet.

Gulf's Smith Estate 1, CSW SW 26-2s-3w, was preparing to core ahead from 7591 feet. A core from 7587 to 7591 feet had a 2½-foot recovery of hard lime and shale with no oil. It topped the Bergen at 7585 feet.

Carter Oil Company's Carter-Harley 1, CNW NW 19-2s-3w, was drilling ahead below 4487 feet.

Northwest of Marlow in Stephens County, the state's fourth deepest test continued testing. When last reported, the well, Coline Oil Company's Johnson 1, SW SE NE 1-2n-8w, had swabbed down 6500 feet with no results. It is at a plug-back total depth of 9164 feet, and was originally drilled to 10,001 feet.

East of the Tussy pool in Garvin County, Carter Oil Company's Potts 1, E½ SE NW 36-1n-3w, was drilling ahead below 3921 feet. In the Carter County portion of the pool, Gulf Oil Corporation's McCrory 2, NW NE SW 5-1s-3w, was drilling ahead at 1930 feet in black shale and lime. Charles E. Clowe's Hefner 1, NW SE SW 4-1s-3w, was rigging up rotary.

What looks to be a new producer for the Doyle pool of Stephens County was Clark Cowden et al's Simpson 10, NE SE NE 11-1n-5w, which topped sand 5335 feet and cored from 5345 to 5365 feet for 14 feet of recovery. The first four feet were conglomerate and the balance was sand well saturated with oil and gas. Operators were washing the hole and may test as it looks like a producer.

Magnolia wants to build carbon black plant

Oklahoma City.—Hearing on the application of Magnolia Petroleum Company for permission to construct a carbon black plant near Stonewall in the Fitts field of Pontotoc County, comes before the Oklahoma Corporation Commission November 23. Cost of the plant is estimated at $750,000. The plant would utilize residue gas in the area for the manufacture of the carbon black.

Drilling proceeds in Oklahoma City area

Oklahoma City.—A southeast edge producer for the Billings pool of Noble County was nearing completion last week. Phillips Petroleum Company and Shell Petroleum Corporation's Hackett 5, NEc SE 21-23n-2w, flowed 250 barrels of oil an hour while drilling from 4306 to 4354 feet in Wilcox sand. It was making 17,000,000 cubic feet of gas daily.

Activity in the area has slowed considerably. Another dry hole was reported, it being Tide Water Associated Oil Company's Derr 1, SEc NW 16-23n-2w, drilled to 4545 feet in the Wilcox sand. After plugging back to 4345 feet, it found salt water. It closes out the northwest trend of production in the field.

In the Edmond pool, Ohio Oil Company was preparing to drill ahead below 6660 feet at Rankin 4, SW SE SW 31-14n-3w. In 24 hours the well flowed 48 barrels of oil and made 1,500,000 cubic feet of gas. Ohio's Dahl 15, SE NE SE 31-14n-3w, bottomed at 6710 feet in Wilcox sand, flowed 125 barrels of oil and 2,000,000 cubic feet of gas in 24 hours. Proving existence of a fault on the east edge of the field, the test may nevertheless open some new territory to drilling.

Oklahoma City. — Headquarters of the Transwestern Oil Corporation has been moved from Oklahoma City to San Antonio. At the same time district headquarters for Oklahoma was moved to Tulsa, where land and geological departments will be maintained. In recent months A. A. Seeligson, president, has spent most of his time in Texas.

Transwestern Oil Corporation was formed last year in the reorganization of the properties and estate left by T. B. Slick. At that time Charles F. Urschel and Mrs. Bernice Slick withdrew from active participation in the concern but remained as directors and substantial stockholders.

New Wilcox sand pool opened in Sedgwick County.

* * *

Ford County wildcat encounters promising lime.

* * *

Showing is found in test near Pawnee Rock pool.

Wichita. — One new oil pool was opened in Kansas last week and two wildcats were holding the attention of oil men there. Both wells had sufficient showings of oil to place them on the list of possible pool openers. The first was in Ford County and the second in Pawnee County.

The new pool, producing from the Wilcox sand, was opened by National Refining Company's Fee 1, SE NE SE 36-27s-2e, seven miles east of Wichita in Sedgwick County. It filled 2000 feet with oil and 600 feet with water after drilling to 3099 feet in the sand, topped at 3087 feet. Production tests were to be started at once. Last week, the well had a hole full of water from 2862 to 2866 feet in the Mississippi lime. It had previously found 7,000,000 cubic feet of gas in the Kansas City lime.

The Ford County well was Olson Drilling Company et al's Fowler 1, CSW 26-27s-22w, four miles northeast of the town of Ford and 16 miles southeast of Dodge City. Fowler 1 had top of the Mississippi lime at 5045 feet and had a show of oil in cuttings at 5060 feet. Subsequent cores failed to reveal any showings and operators were preparing to core ahead from the total depth of 5090 feet. Seismic highs have been reported in the region, found by major oil companies interested there.

Second well was Stanolind Oil & Gas Company's Jantz 1, SWc 25-20s-16w, two miles south of the Pawnee Rock

pool in Pawnee County. It drilled into the Siliceous lime at 3804 feet and had the show to 3809 feet. Seven-inch casing was run and the well was waiting on cement before drilling in. It is seven miles northeast of Larned.

Acid was to be run before a potential test was taken at Fred Rust et al's Drach 1, NEc SW 12-22s-13w, which opened a new pool for Stafford County two weeks ago. Bottomed at 3705 feet in Siliceous lime, the test pumped 595 barrels of oil natural in 24 hours.

KANSAS

Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Stanolind, Zugg 2, nw nw ne 34-15s-13w	1814	3398
Shell, Peterman 1, se ne se 13-16s-14e.	1654	3366
Darby, Burmeister 2, se sw se 3-17s-11w	2047	3306
Cities Service, Hogan 2, sw se nw 11-17s-11w	909	3376
Transwestern, Myers 4, ne ne ne 13-17s-11w	1054	3240
Brouk et al, Gory 1 nw nw sw 10-17s-13w	255	3352
Stanolind, Wm. Panning 3, se se se 2-20s-11w	1653	3292
F. Panning 5, nw sw ne 2-20s-11w.	2240	3292
Chas. Rose 1, se se ne 3-20s-11w..	225	3321
Gus Stukeman 1, ne ne sw 11-20s-11w	330	3302
I.T.I.O., A. Bryant 1, ne ne se 23-20s-11w	1956	3303
Magnolia, Roetzel 15, se sw se 24-20s-11w	1301	3269
I.T.I.O., Schrepel "B" 2, nw nw sw 25-20s-11w	1267	3325
BUTLER COUNTY—		
National Ref. Lathrop 14, se se nw nw 17-23s-4e	85	2080
Sheldon & Wixon, Dohren 3, se sw ne 11-25s-3e	100	2712
Nat. Wissman, Schriber 1, nw se se se 3-26s-4e	40	2427
Magnolia, F. L. Anderson 9, c ne se 9-27s-4e	7½	2436
CHASE COUNTY—		
Smith & Polhamus, Leedy-Trees 1, cne¼ 36-22s-9e	*	2660
ELLIS COUNTY—		
Margay, Johansen 7, se se se 22-11s-17w	2724	3381
Carter Oil, Karlin 1, ne ne nw 1-12s-18w	*	3853
Bay Pet. Co. et al, Curtis 1, se se sw 1-13s-18w	631	3635
Aylward Prod. et al, Berens 1, se se se 10-14s-16w	*	3493
ELLSWORTH COUNTY—		
Hinkle et al, Alden 1, se se sw 17-17s-10w	*	3331
Skelly, Moran 1, se se se 31-17s-10w.	6781	3015
GRANT COUNTY—		
Panhandle Eastern, McClelland 1, cs½ 36-30s-35w	¶5	2742
United Prod. Penney 1, c section 27-30s-36w	¶4.5	2673
GREENWOOD COUNTY—		
H-A-L Oil Co., Wright 5, nw ne sw 23-26s-9w, pb 2200 ft	*	2260
HARVEY COUNTY—		
Shaffer et al, Denno 3, nw ne sw sw 12-23s-2w, pb 2981 ft	538	2988
Derby, Jerome 1, sw sw sw ne 30-23s-3w	461	3359
KINGMAN COUNTY—		
Carter Oil, Davis 1, ce½ ne ne 24-28s-8w	*	4571
LOGAN COUNTY—		
Morgan & Flynn et al, Hare 1 cnw¼ 9-13s-37w	*	5465
McPHERSON COUNTY—		
Shawver, Fletcher 1, sw sw sw 16-19s-1w	180	3446
Continental et al, Haxman 5, nw ne nw 29-21s-1w	613	3305
Continental, C. Jones "A" 1, ne ne ne 31-21s-1w	520	3292
OSBORN COUNTY—		
F. C. Haddock et al, Slater 1, ne sw ne 33-10s-15w	*	3825
RENA COUNTY—		
Transwestern et al, Teten 1, nw nw se 12-23s-4w	1383	3410
RICE COUNTY—		
Continental, Rose Michells 2, se ne sw 12-18s-8w	1622	3246
Anna Grath 2, se sw sw 32-20s-7w	690	3340
Gulf, Lyons 2, ne ne ne 18-20s-9w...	301	3315
Elbar Corp., Ehlers 1, ne ne se 8-21s-9w	*	3534
Gerbrand-Pulse et al, Willman 1, sw sw sw 22-21s-9w	¶22.8	3325
RUSH COUNTY—		
Wakefield et al, Zimmerman 1, se se sw 7-16s-18w	*	3664
Morgan & Flynn, Koril "A" 4, se se nw 23-18s-16w	1047	3558
RUSSELL COUNTY—		
Cities Service, Vaughn 5, nw nw sw 17-14s-14w	1902	3069
Hays Sockrider, Roxberger 2, se sw se 26-14s-14w	3065	3198
Philhan et al, Deines 1, ne ne nw 33-14s-14w	*	3205
Central, Foster "B" 5C, ne se ne 3-14s-15w	2268	3305
Central Pet. Co., Foster "B" 8, nw sw ne 3-14s-15w	1575	3310
Stanolind, C. A. Mermis 13, se ne se 5-14s-15w	206	3106
C. A. Mermis 16, se nw ne 5-14s-15w	222	3110
Carter, Detrich 8, ne se sw 8-15s-13w.	1944	3175
Transwestern et al, S. Bloomhaur 2, sw se sw 19-15s-13w	6483	3303
Coralena, H. Sellens 6, nw nw nw 30-15s-13w	884	3313
Gulf, Hoffman 10, sw sw sw 31-15s-13w	958	3282
Cities Service, Eichman 1, sw sw se 12-15s-14w	866	3123
Gulf, Mollie 6, ne nw sw 25-15s-14w.	1666	3321
Texas, N. Schnoor 1, nw ne ne sw 31-14s-3w	1125	3112
SEDWICK COUNTY—		
Roxana Drlg. Co., Woodan 1, sw nw sw 26-26s-1w	*	2469
STAFFORD COUNTY—		
Stanolind, Komarek 10, ne se ne 30-22s-11w	1474	3580
Stanolind et al, Heyen "B" 10, sw nw ne 31-22s-11w	1965	3542
Torry & Feaster, J. Allen 1, nw nw se 34-22s-12w	*	3829
Kessler et al, Pinkston 1, ne ne nw 17-22s-14w	*	3939
Stanolind et al, M. Volker 1, sw sw ne 23-24s-11w	1922	3801
STEVENS COUNTY—		
Kuhn Bros., Curtis 1, center ne¼ 25-31s-39w	¶6.8	2620
SUMNER COUNTY—		
Stelbar, Barlow 4, ne sw ne 33-31-1w	264	3700
WOODSON COUNTY—		
Oko Oil Co., Campbell 1, nw nw ne 7-24s-14e	12	1726
Saco, Klick 7 se sw sw 20-25s-14e..	7	1426

*Failures; †Junked; ¶Million cu. ft. gas.

Barton County Test Shows

Another wildcat which has fair chance as a pool opener is Stanolind Oil & Gas Company's Hagen 1, SEc 21-20s-11w, 1½ miles south of the Ellinwood pool and two miles west of the Silica south pool in Barton County. It had top of the Siliceous lime at 3328 feet and a core from 3330 to 3333 feet showed some oil, carrying a fair saturation and having good porosity.

In the Vaughn pool of Russell County, National Refining Company's Reinhardt 3, SE NE NE 19-14s-14w, filled 2900 feet with oil in 12 hours after drilling to a total depth of 3056 feet in the Siliceous lime. It had top of the lime at 3005 feet.

Latest pool opener for the county, I. W. Murfin et al's Opdycke 1, SWc 20-14s-13w, northeast of the Hall pool, pumped 100 barrels of oil in 12 hours from the Gorham sand at 3180 feet. On the basis of the test the well is estimated good for 200 barrels of oil daily, but was cutting about 20 percent water according to operators.

Wallace County Wildcat Abandoned

Another extreme western Kansas wildcat has been marked dry and abandoned. It was H. F. Wilcox Oil & Gas Company's Parker Ranch 1, SEc NE 9-11s-40w, north of Sharon Springs in Wallace County. Total depth was 5272 feet.

W. G. Talbott and Harwood Oil Company's Downs Estate 2, CNE NW 32-28s-2e, was a new location, northeast of the discovery producer, completed for 6,600,000 cubic feet of gas from the Stalnaker sand at 2229 feet.

Rig Shortage in K-M-A deep development threatened.

★ ★ ★

Ellenberger lime exploration at Ranger encouraged.

Ranger, Texas.—Exploration of the Ellenberger lime horizon in the old Ranger district gained encouragement from a new strike made the past week in northwestern Eastland County. Hickock Developing and Producing Company's Van Parmer 1, C NW SE of S. P. Ry. Section 477, about 8 miles northwest of Cisco, created attention with a natural flow of 901 barrels of 42.6 gravity oil from porous limestone at 4018-4025 feet. Production was found immediately below the Pennsylvania section ,and at a level that has been reached by comparatively few wells in the district. This discovery is about 2 miles southeast of a prolific gas field developed in 1925-27 from the Ranger sand near the 3800-foot level.

The Rotan and Avoca pools, located in Fisher and Jones counties, respectively, registered favorable and adverse developments. Large initial yield of wells in the Rotan area will not stand up, and the average closed-in pressure has declined about 50 percent. There are 12 producers, and the majority of these have declined to the pumping stage, else have to be agitated to flow their proration allowable. Sunray Oil Company's Robinson 3, SW SE NW Section 172, gauged 808 barrels oil in

8 hours after drilling 7 feet into the sandy-lime to a total depth of 3545 feet. Search for a deeper oil zone made by Magnolia Petroleum Company's Ella Smit 2, midway between the two most easterly producers, was partially rewarded when lime at 3818-20 feet yielded 1 bailer fluid per hour, testing about 50 percent oil.

Avoca Pay Pushed Northward

Expansion of the Canyon horizon in the Avoca field one mile to the north was attained when Fain-McGaha Oil Corporation and Sinclair Prairie Oil Company's F. Olson 1, SWc NE Section 190, tested 13 barrels hourly from sandy-lime at 3213-16½ feet. Operations were halted to cement pipe for a completion at this depth. West, Honea and Ungren & Frazier's D. Southard 1, NWc SE Section 202, 2 miles south of the 4-well producing area, drilled into water and was abandoned at 3495 feet.

An aggressive drilling program is contemplated for the discovery lease in the Guitar pool, Jones County, as result of the sale of controlling interest to Ralph G. Trippett, Shreveport, head of the General American Oil Company. R. B. Farris, E. A. Ungren and A. J. Frazier are credited with receiving $75,000 cash, and $125,000 payable from production for the Guitar 310-acre discovery site, with 11 wells prorated to 430 barrels daily.

North Permian Basin trend in wildcatting is to north

Midland, Texas.—Wildcat operations in the north portion of the Permian Basin are shifting north towards the Texas Panhandle district. Considerable prospecting is being lined up by independents for the triple row of non-producing counties that separate the two districts. Majors rate the intervening counties as potential sources of production, and have been acquiring large lease blocks in recent months. Comparatively few of the recorded failures were drilled to sufficient depth to test the main body of the lime section. Large interests have indicated that they will support properly located wildcat projects through the purchase of protection acreage or by cash contributions.

Negotiations are pending for the drilling of a test on an 18,000-acre block in central Lamb County, due north of Littlefield, with location slated for League 650, State Capitol lands. This block was assembled by Duggan Brothers and J. W. Murchison, and it is reported that American Liberty Oil Company will assume drilling obligations.

Lubbock County is promised its first test in more than five years through the efforts of Ed Harris et al, who have been assembling a drilling block near Posey.

V. McAllister and others are lining up a 12,000-acre drilling block about 4 miles south of Crosbyton, Crosby County, and are committed to start operations early next year.

East Flank Active

The east flank of the Basin has active tests in Dickens County, and Barnett Petroleum Corporation is due to start a 5500-foot test shortly on a 6000-acre block near Roaring Springs, Motley County. The latter is a geophysical prospect, and has been shot by several large concerns.

Pete Wiggins and Ed Hyde's Slaughter Dean 1-A, located about 4 miles north of production in the Duggan pool, Cochran County, is slated to be the first failure for the area. Sulphur water was encountered at 5070-85 feet, with an elevation of 3686 feet. The same group's Slaughter Dean 1, about 4 miles northwest of nearest production, cleaned out to bottom after a nitro shot at 5030 feet, and swabbed 162 barrels of 30.6 gravity oil in 5 hours. It has been in process of completion since mid-September.

Devonian Oil Company's Duggan 1, east extension for Duggan pool, swabbed 5 barrels hourly after light treatment with acid, and is to be deepened from 5019 feet. It has an elevation of 3680 feet.

Equipment will govern growth of K-M-A field

Wichita Falls, Texas.—Shortage of heavy duty rotary rigs is contronted by operators in the K-M-A deep field, and the future growth of drilling activity will likely be governed by the availability of suitable equipment for developing the 3800-foot Strawn sandy-lime horizon. Survey of field operations reveals a total of 24 tests in process of completion and at the final casing point. Drilling is in progress on 17 additional tests, and derricks and rigs have been set up on 7 sites. Although 5 locations are carried on current field reports, actually scores have been authorized.

Drilling to the Strawn horizon requires sturdy equipment, and contractors must operate efficiently to make a profit in drilling wells to the top of the lime near the 3700-foot level, where 7-inch casing is cemented. The prevailing price is $12,000, with the contractor furnishing fuel and water.

TEXAS PANHANDLE

Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Northern Oil Co., E. Cooper 5	675	3157
Texoma Nat'l Gas Co., J. M. McLaughlin 4-M	¶18.4	2640
United Crude Oil Co., E. Cooper 4-A	744	3203
GRAY COUNTY—		
Cities Service Oil Co., W. C. Archer 7-B	671	3280
Kewanee Oil Co., J. S. Morse 5-C	289	2612
King Oil Co., Castleberry 11	543	3280
R. B. Thompson 8	555	3279
Sinclair Prairie, D. W. Carey 4	455	3300
Smith Bros. Ref. Co., Castlebury 1	825	3295
HUTCHINSON COUNTY—		
Danube Oil Corp., W. A. Starnes 4	1039	3160
Kerlyn Oil Co.-Timms & Robinson, W. B. Haile 1	55	3212
Phillips, R. E. Thompson 4	637	3217
Rogan Oil Co., R. C. Kay 2	965	3216
Stanolind, W. B. Haile 6-A	400	3088
W. B. Haile 7-A	778	3071
J. L. Moore 10	205	3075
R. C. Ware 12-B	240	3112
E. E. Watkins 3-B	389	2892
MOORE COUNTY—		
Phillips, Nell R. Loeber 1	¶29.9	3325
E. C. Ochsner 1	¶49.8	3398
Texoma Nat'l. Gas Co., Coon-Sneed 2-M	¶34.3	3290

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS

Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
ANDREWS COUNTY (Means)—		
Humble, J. S. Means 31	258	4530
R. M. Means 13	544	4567
CRANE COUNTY (Jordan)—		
Sinclair Prairie, University 2, Ise 27	3104	3565
Snowden & McSweeney Co., University 2	353	3564
CRANE COUNTY (McCamey)—		
The Texas Co., R. King 34	127	2108
CRANE COUNTY (Waddell)—		
Gulf, M. F. Henderson 10	7408	3571
ECTOR COUNTY (Goldsmith)—		
Cities Service, H. E. Cummins 5-B	806	4250
W. H. Dunning Estate, C. Scharbauer 6-A	1806	4225
Humble, C. Scharbauer 3-C	216	4202
Landreth Prod. Corp., C. Scharbauer 7-B	1789	4205
C. Scharbauer 8-D	1580	4230
C. Scharbauer 6-E	872	4220
C. Scharbauer 3-G	1336	4212
Rogers & Rogers, T.P. Land Trust 1-B	466	4289
Shasta Oil Co., C. Scharbauer 5-C	1593	4210
Shell, H. E. Cummins 4-B	125	4243
T.P. Coal & Oil Co., C. Scharbauer 10	1811	4270
FISHER COUNTY (Rotan)—		
Sunray Oil Co., M. Robinson 3	2400	3545
GAINES COUNTY (Seminole)—		
Ohio Oil Co., S. J. Averitt 1	150	5073
HOWARD COUNTY—		
Ed. S. Holman-Brazos Prod. Co., T.P. Land Trust 1	*	2570
Magnolia, A. E. O'Daniel 2	616	2800
Royal O&G Corp., D. Roberts 15	1124	2573
PECOS COUNTY (Masterson)—		
Samwan Oil Co., J. Masterson 7	409	1471
PECOS COUNTY (Pecos Valley)—		
C. S. Messinger (was R. F. Gilman) L. L. Byrne 2	100	1378
PECOS COUNTY (Taylor-Link)—		
Amerada, University 5-A	162	1654
REAGAN COUNTY (Wildcat)—		
Moore Bros. Corp., University 1	*	3073
K. E. Sherman et al, W. E. Friend 1	*	2488
UPTON COUNTY (McCamey)—		
Anderson Oil Co., Cordova Union 1, sec 23	72	2205
Continental, A. A. Reese 15	518	2634
A. D. Devore & J. R. Minnich, Burleson-Conoco 6	827	2166
J. W. Ellis et al, C. W. Hobbs 1	*	2179
A. R. Eppenauer et al, J. F. Lane-Pure 4-A	702	2118
Alf Reece Jr. (was Choate-Hogan), Burleson 2	938	2389
Dan M. Short et al, M. B. Webb 1	*	3210
Stanolind, A. S. Burleson 46	71	2149
Williams & Williams Drlg. Co., Robbins 6	390	2166
WARD COUNTY—		
Gulf, E. W. Estes 59	728	2630
E. W. Estes 62	1546	2680
Humble, University 19-F	918	2745
T.P. Coal & Oil Co., M. Barker 11	416	2395
Yeager & Armstrong, T. M. White-Sinco 1-A	70	2233
WINKLER COUNTY (Hendrick)—		
Skelly Oil Co., F. Leck 7-A	750	3015
WINKLER COUNTY (Kermit)—		
Amerada, L. Daugherty 5-A	870	2950
Illinois Oil Co., Abilene State Bank-Conoco 15-A	861	3085
Magnolia, J. B. Walton 102	384	3240
Sinclair Prairie, H. E. Cummins 1-D	1133	3060
F. S. Vaden 4-B	560	3045
F. S. Vaden 5-B	1005	3080
T.P. Coal & Oil Co.-Wahlenmaier Pet. Corp., Duval Roy. Co. 2	499	3077
WINKLER COUNTY (Keystone)—		
J. R. Sharp et al, J. B. Walton-Conoco 1-A	203	3458
WINKLER COUNTY (Scarborough)—		
Richardson Oils, Inc., W. F. Scarborough-Richardson 3-E	523	3010

*Failures; †Junked; ¶Million cu. ft. gas.

Fuel cost for steam rigs is high, as the gas yield of the completed wells is not adequate to fire boilers.

Operators are giving recognition to the probable small average yield per acre, considering the development costs, and are seeking to have future wells spaced at 20-acre intervals. Heretofore, a 10-acre spacing has generally prevailed. Tentative estimates on the recovery per acre place an average of from 5000 to 6500 barrels. This forecast is likely to be given an upward revision since recent expansion of the productive area has resulted in the discovery of thicker pay zones.

NORTH TEXAS Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
O. T. Anderson Oil Co., W. M. Justice 14, blk 3	*	870
Bridwell Oil Co., L. F. Wilson 4-F	15	1389
L. T. Burns et al, J. L. Prideaux 3, sec 1868	*	907
Dick Duncan et al, N. I. Andrews 9, lot 18	10	980
N. I. Andrews 10, lot 18	15	985
Fain-McGaha Oil Corp., E. R. Fain 6-A, blk 3	*	1808
Golding & Cochran, J. M. Kunkel 4	15	1164
W. H. Hammon & Hanlon-Buchanan, Inc., W. P. Ferguson 1	*	4008
CLAY COUNTY—		
F. M. Gates et al, I. H. Kempner 2, sec 4	*	1004
The Texas Co., O. T. Roach 1, blk 4	*	1180
COOKE COUNTY—		
F. W. Merrick, Inc., N. Piott 8	¶¼	344
Geo. L. Pace et al, R. E. Aldridge 13	37	1183
Trumter Oil Co. et al, Andress 3-A	39	769
Andress 4-A	35	785
Andress 5-A	100	786
JACK COUNTY—		
Brazos River Gas Co., J. M. Box 4	50	2950
G. R. Clayton 3	*	3285
E. C. King 3-B	*	3030
W. H. Hammon & Herbert, F. H. Rhodes 9	600	3051
Thos. D. Humphrey, G. T. Smith 5	50	2989
Mullendore, Berry & Berry, R. R. Clayton 4-B	480	3080
Taubert & McKee, Clayton Bros. 4	197	3103
Tebay & Leberman, Rankin 1	*	3305
Joe Worsham et al, O. E. Cash 1	85	3303
MONTAGUE COUNTY—		
Arco Oil Co., M. H. Salmon 14-E	114	1611
THROCKMORTON COUNTY—		
R. H. Alexander et al, R. H. Brown 2, sec 929	*	1037
G. C. Foster et al, R. H. Brown 2, sec 920	*	1230
Marshall & Kennedy, R. D. Davis 1, sec 965	*	653
WICHITA COUNTY—		
Boardman Bros., J. L. Jackson 6-D, blk 15	16	699
Deep Oil Dev. Co.-Seaboard O&G Co., Munger 2-C, blk 25	800	3786
Fresno Oil Co., L. F. Ramming 29, sec 1	46	1734
Hawkins-McQuigg Oil Co., E. E. Goetze 10	†	831
E. E. Goetze 11	8	844
E. E. Goetze 12	20	836
E. E. Goetze 13	10	861
E. E. Goetze 14	5	635
King Oil Co., S. B. Burnett 1-C, sec 3	*	903
E. A. Martin 1	*	1768
W. B. Omohundro et al, First Nat'l Bank 1, blk 28	662	3850
Erwin Schwegler et al, E. E. Goetze 4	5	636
S. H. Walton et al, Will Burnett 8	2	936
WILBARGER COUNTY—		
Phillips Pet. Co., Grover Pratt 1, sec 43	600	2573
YOUNG COUNTY—		
S. D. Glover et al, H. Hennig 1, sec 410	28	1087
N. D. Goldsmith et al, J. P. Dunigan 8, sec 163	*	1059
Hardy Oil Co., Benson 14, sec 1391	10	904
Hickock Prod. & Dev. Co.-Harry Reynolds J. J. Martin 1	2000	3554
King Oil Co., Texas L. & M. Co. 1, sec 207	8	752
Homer Lee et al, J. L. Boone 12, sec 1	*	543
Lupton & J. McLester, G. M. Gibson 4	378	3656
W. L. Schenck et al, L. H. Simmons 1	*	550
Henry Zweifel et al, Allar Co. 1, sec 3409	¶1½	733

*Failures; †Junked; ¶Million cu. ft. gas.

Northwest Outpost Well Flows

West portion of the field contributed the outstanding development the past week when Jack Kadane et al's C. A. Mangold 1, Block 38, P. Castleman Survey A-35, about 1¼ miles west of Kemp City, flowed natural by heads after drilling cement plugs. It is estimated capable of 800 barrels daily. Top of lime was logged at 3635 feet, and first saturation at 3670-75 feet. The main pay at 3700-26 feet consists of sand and sandy lime. This outpost is about ½ mile northwest of LeBus Brothers et al's G. W. Lewis 1, which has been in process of completion for several weeks with a natural flow.

Clyde-Texan Oilfields Company's Burnside 1, easternmost producer in the K-M-A field, has not been pumped sufficiently to determine its potential rating. Officials in charge estimate the well capable of 200 barrels of oil daily from pay at 3936-61 feet, and it has been allotted an allowable of 68 barrels daily, including 18 barrels extra consideration given wells that report water. The above company's Burnside 2, located 660 feet south and 300 feet east of the producer, was drilling at 3118 feet, using its own rig. Officials in charge predict that drilling time can be reduced to 24 days per well hereafter.

Large scale trading in leases and royalties has not diminished, and a large number of operators and companies from other districts have been attracted to the fast growing field. An East Texas field group is reported to have acquired substantial lease holdings, and is negotiating for the purchase of the Taxman Refining Company's skimming and cracking plant near Wichita Falls. The latter plant was recently sold to a Houston salvage concern.

J. T. Harrell and E. H. Eddleman's First National Bank-Gulf 1, Lot 2, Block 26, immediately north of the older section of the field, is checking high on structure in logging top of lime at 3641 feet. Saturation was cored at 3660-67 feet, and operations halted to cement pipe at 3637 feet. This test logged dry sand at 2833-56 feet and broken sandy-lime to 2951 feet.

This intermediate horizon is likely to yield commercial oil production within or adjacent to the deep field. Mid-Continent Holding Corporation's A. W. Burnside 1-D, John M. Sharp Survey A-262, about 4 miles east of the K-M-A deep discovery, passed up oil saturation at 2960-78 feet and 3005-09 feet, with an elevation of 1004 feet. The hole filled with oil when left standing for a period at 3123 feet. It was drilled to the latter depth late in 1931, and the presence of the oil was reported in April, 1932.

Hickock Developing & Producing Company and Harry Reynolds' J. J. Martin 1, C. W. Townsend Survey A-1642, about 2 miles west of nearest production in the South Bend field, southern Young County, uncovered a deep lime zone for the area. This semi-wildcat flowed 100 barrels natural from lime at 3435-54 feet, and flowed 90 barrels oil per hour through choke after using 10,000 gallons of acid. Water broke in after using acid.

East Texas field still active with 100 rigs running.

* * *

Property owners may sponsor production suspension.

Kilgore, Texas.—The drilling of inside locations in the East Texas field is destined to continue through the current year at the high rate maintained during the past six months. Volume of field work increased to 100 active rigs during the past two weeks, and a heavy quota of completions is to be made before the close of 1937. Property owners as a whole have had a profitable year. Surplus earnings are being applied to lease development, thereby enabling the aggressive operators to command a greater portion of the oil remaining in the giant field.

Field operations will begin tapering off during the Christmas holidays. Then the physical condition of the field will have direct influence over the amount of drilling to be scheduled for the fore part of 1938. Allowable production of the field will increase to 500,000 barrels daily in February or March, provided development is not curtailed sharply.

Pressure Declining

In the meantime the normal spread of the water table and sagging bottom hole pressures, arising from the increased production, will figure prominently in future proration hearings.

Completion of new wells daily and steady gain in fluid withdrawals from the structrue are causing the bottom hole pressure to drop faster than heretofore forcast by engineers. The average pressure has declined about 13 pounds per month for the last three months, and if the rate continues the projected curve will reach the 1000-pound level within 10 months. Greater portion of the field is expected to be reduced to the pumping stage when the

average pressure reaches 1000 pounds. If it arrives within two years the quantity of pumping equipment in stock and capable of being manufacturer will not be adequate to cover the demand of this single field.

It is quite probable that a politically potent group of East Texas property owners will exert influence towards the complete suspension of production in order to bolster the reservoir pressure. Owners of leases that have not followed a close spacing program and at all times adhered to production restrictions will oppose the movement on the grounds that they would lose oil in place through the equalization of pressures. Majors would defy the plan without exceptions as their crude supply setup and plant operations are keyed to an uninterrupted flow from the field. The latter also have begun installing pumping units on all leases showing steady pressure declines, and are contracting for equipment to be delivered next year. Similar protection has been taken by the seasoned independents with holdings in the field.

Each batch of well spacing exceptions approved by the Texas Railroad Commission includes a big quota for the East Texas field. Regular 330-foot spacing has become a rarity in this field for more than a year. Scores of leases bearing more than one well have been drilled to a density of less than one-acre per well, and additional tests are being drilled on these properties. Adjacent property owners, often threatened with court action by royalty owners, proceed to match the drainage. The commission has given no indication that it will alter its liberal policy, and is apparently content to permit development to run its course.

The field embraces approximately 133,000 productive acres, with 23,900 wells for an average density of 5.6 acres per well. Independents, owning about 40 percent of the acreage, have attained a density of 4.6 acres per well, and currently are drilling about 60 percent of the new wells.

EAST TEXAS
Completions

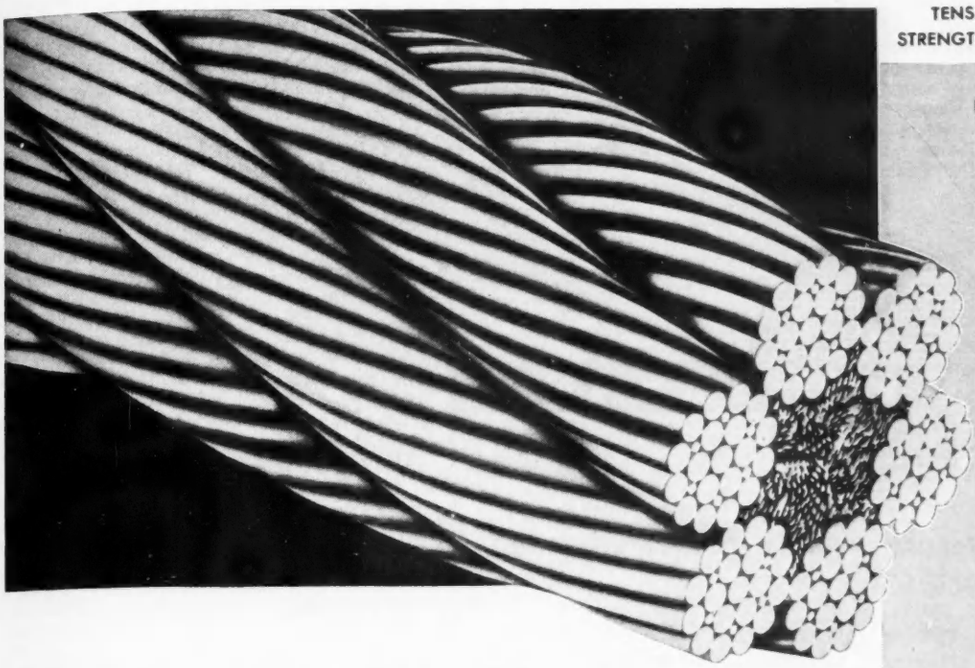
Company, Well, Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
E. T. DeArman et al, Arnold-Lacey 6 (97-ac)	504	3667
Gulf, Mayfield Co. 10-C (103.28-ac)	1200	3672
Humble, L. Barton 9 (62.23-ac)	8400	3754
Sol Dennis 12 (73.15-ac)	8500	3740
Ida Holt 15-B (97.8-ac)	7800	3748
J. E. Wheelis 23-A (158.4-ac)	6500	3718
Magnolia, W. B. Kee 6 (56.41-ac)	2500	3822
McMurrey Pet. Corp., A. D. Blackwell 18-A (92.7-ac)	8500	3669
Navarro Oil Co., C. Young 5 (30-ac)	10000	3750
Ohio Oil, Kangerga 11, Acct 1 (105½-ac)	2500	3628
Otis Phillips (was Oil Prop. Corp.), E. B. Alford 2 (3-ac)	80	3689
Geo. B. Ray et al, L. J. Pinkston 13 (49-ac)	7600	3591
Royal Pet. Corp., Bradford 2 (4.06-ac)	100	3606
Stanolind-Pure, Ras Lacy 4 (100-ac)	95	3615
Sun, S. A. Selman 11 (67-ac)	6800	3711
Texas Canadian Oil Corp., J. Jackson 13 (46.02-ac)	3500	3723
Tide Water Associated, L. J. Pinkston 26-B (135-ac)	7200	3786
Ward Oil Corp., J. M. Finney 16-A (74.51-ac)	5500	3707
KILGORE AREA—		
C. A. Everts Drlg. Co., J. H. Laird 8 (11½-ac)	4500	3603
Erle P. Halliburton, Inc., W. D. Lacy 13-B (63.1-ac)	1200	3660
Hammill & Smith, M. Culp 3 (63/100-ac)	3600	3575
A. M. Faircloth 3 (5.08-ac)	1000	3555
Humble, J. A. Knowles 24 (100-ac)	4000	3616
Jones & O'Brien, Inc., Hughey-Ross 18 (118.1-ac)	5000	3543
Hughey-Ross 19 (118.1-ac)	5500	3548
Magnolia, S. E. Brox 13 (70.32-ac)	6400	3656
A. F. Sheppard 3 (422.99-ac)	480	3593
Meco Prod. Co., T. Williamson 11 (150-ac)	1800	3695
W. B. Murphy, Rec.-W. B. Sowell, W. P. Luse 2 (8.7-ac)	3000	3578
W. P. Luse 3 (8.7-ac)	2500	3585
Natural Pet. Co., Henderson 5 (42.7-ac)	144	3580
Navarro Oil Co., R. N. Brightwell 25 (113.08-ac)	7200	3655
B. F. Phillips et al, Jordan-Walker 3 (10-ac)	2000	3592
Potter Bros. et al, J. E. Bagwell 1, lot 8, blk 153	96	3555
Selby O&G Co.-Lewis Prod. Co., M. T. Cole 16 (80-ac)	8000	3552
Sun, Hilburn-Loyd 31 (133.7-ac)	5000	3664
Sun-Seaboard Oil Corp., M. T. Cole 53 (266.17-ac)	8400	3574
The Texas Co., W. Davis 14 (84-ac)	7200	3530
Ward Oil Corp., J. A. Beall 10 (80-ac)	1500	3698
LONGVIEW AREA—		
Atlantic - Sun, Wm. Anderson 15 (83.27-ac)	8300	3510
J. T. Crotty et al, T. B. Webb 6 (31-ac)	5600	3695
Day & Co., Victory 3 (8¾-ac)	4600	3580
FHE Oil Co., R. Christian 16 (61-ac)	8500	3654
Hamill & Smith, Everett-Hill 5 (11.3-ac)	8000	3525
Humble, M. Killingsworth 17 (99.7-ac)	9600	3610
Eve O'Byrne 14-B (104.2-ac)	5000	3693
Kewanee Oil Co., G. Hampton 30 (168.77-ac)	9800	3597
Magnolia, Acey Christian 17-ABC (64.95-ac)	9000	3670
L. J. Everett 24 (166.96-ac)	9500	3610
W. R. Nicholson et al, Fee 2 (460-ac)	600	3695
O.W.R. Oil Corp., C. E. Davis 7 (23-ac)	10000	3592
Pet. Corporation of Venz., I. Walker 15 (122.44-ac)	4800	3662
P. H. Pewitt et al, L. A. Williford 10 (133-ac)	1000	3645
L. A. Williford 14 (133-ac)	750	3675
B. F. Phillips & D. P. Dean, J. A. Godfrey 1-A (20-ac)	600	3727
Rajo Oil Corp., J. C. Barrett 12 (80-ac)	2600	3643
Shell, J. Moore 38 (303.7-ac)	6500	3555
Stanolind, L. C. Ingram 14 (80-ac)	9600	3585
Ben Rodden 9 (80.9-ac)	4000	3595
Ben Rodden 10 (80.9-ac)	4200	3565
A. A. Warren, Rec., Buckley-Adams 1 (2-ac)	8800	3628
ANDERSON COUNTY (Cayuga)—		
Tide Water Associated-Seaboard Oil Corp., Wills 3-B (377.1-ac)	750	4087
FRANKLIN COUNTY (Talco)—		
Byrd & Frost, Inc., E. L. Phillips-Gulf 17 (400-ac)	242	4294
Dean Bros. & Lennox, O. E. Bolin 2 (9.24-ac)	256	4315
O. E. Bolin 3 (9.24-ac)	100	4320
Humble, P. I. Dawson 7 (80.45-ac)	187	4318
Stroube & Stroube, M. L. Norman-Prince 5 (135-ac)	438	4290
HENDERSON COUNTY (Cayuga)—		
Roeser & Pendleton, Inc., Ben Wathen 7 (93-ac)	2400	4106
HOPKINS COUNTY (Sulphur Bluff)—		
W. L. Goldston-Normandie Oil Corp., Smith 21 (450-ac)	750	4524
D. S. Hager, Luse & Russ, Ronnie Long 2 (39.86-ac)	1200	4501
Shell Pet. Corp., J. G. Reynolds 5 (200-ac)	127	4507
TITUS COUNTY (Talco)—		
GMW Oil Co., W. D. Cato 5 (12¼-ac)	70	4320
Housh & Thompson, Inc., J. Hargrove 5 (75-ac)	508	4265
Humble, H. C. Fry 8 (87-ac)	189	4298
Myra Galt 6 (80-ac)	335	4295
CHEROKEE COUNTY—		
E. H. Moore, Inc. et al, Chronister Lumber Co. 1	*	5921
HENDERSON COUNTY—		
S. Hunt, DeArman & McMillan, A. R. Dillard 1	*	6503
HOPKINS COUNTY—		
Abbott & Rutland, Lee Peyton 1	†	2190
MARION COUNTY (Rodessa)—		
Fohs Oil Co., Mary McReynolds 1, A. D. S. Coy sur	¶	6014
Union Producing Co. (Union), Hutchinson 3, A. D. S. Coy sur	157	6091
Hutchinson 4, A. D. S. Coy sur,.	50	6145

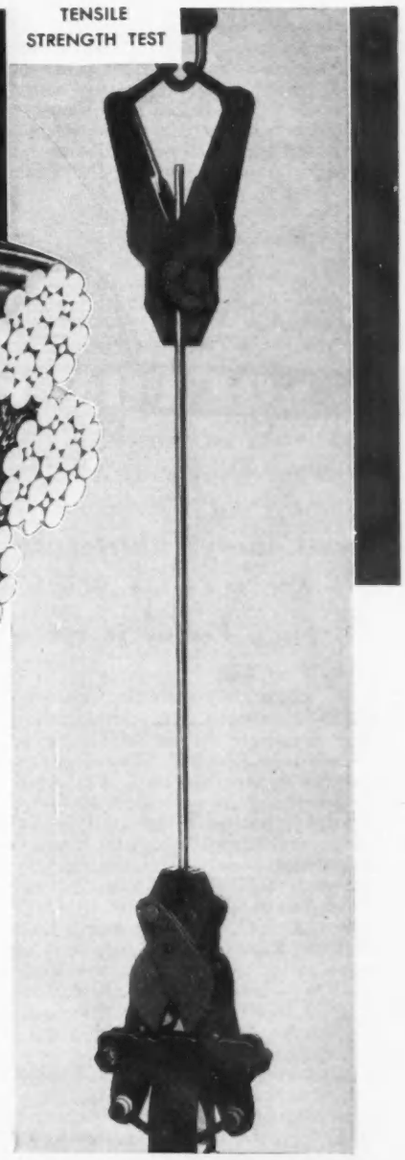
*Failures; †Junked; ¶Million cu. ft. gas.

American Wire Lines
Distributed throughout the Mid-Continent and Gulf Coast by
(see opposite page)
BRIDGEPORT
For prompt delivery on American Wire Lines—out of stock or carloads direct from factory—telephone any Bridgeport Representative, Store or Office—Station to Station.
THE BRIDGEPORT MACHINE COMPANY
HOUSTON . DALLAS . SAN ANTONIO . CORPUS CHRISTI . ODESSA
SHREVEPORT . TULSA . OKLAHOMA CITY . WICHITA . and Branch Stores

East Texas drilling activity will continue

Kilgore.—Adequate permits to assure a continuation of the active drilling program in the East Texas field through the remainder of the year have been approved by the Railroad Commission, and a large number of applications for spacing exceptions are pend-





WE TESTED THIS 450 TIMES

To prove its Quality

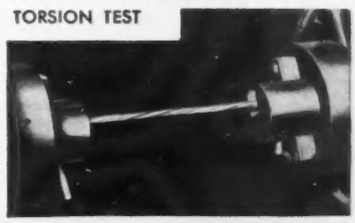
JUST as each part of a well built machine* must be tested individually before it is accepted, so each individual wire in American Tiger Brand Wire Lines is tested at least 3 times, in addition to test for size, before it can pass to the stranding machines.

Your work puts wire lines to the severest tests. They must string or reeve easily and quickly . . . spool well . . . avoid whipping at high speeds . . . take the terrific jerks of starting and stopping.

And it is these qualities in American Tiger Brand Wire Lines which have given them their dominant position in the field — qualities which have been built into them by engineers whose wealth of experience is backed by over 100 years of wire making.

American Tiger Brand Wire Lines are available in either Standard (non-preformed) or Excellay (preformed) constructions.

***USS American Tiger Brand Wire Lines are machines, more depended on than many. They fit the definition "Any combination of mechanism for utilizing or applying power."**



AMERICAN TIGER BRAND WIRE LINES

ELECTRICAL WIRES AND CABLES

We manufacture a complete line of Electrical Cables for the Oil Fields, some of which are —

Amerclad All-Rubber Cords and Cables—Including Oil Proof and Oil Resisting Types · Rubber Covered Wire · Reliance URC Weatherproof Wire · Motor Leads · Switchboard Wires · Geophone · Seismograph and Electrical Prospecting Cables.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY
Russ Building, San Francisco

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

ing. Spacing of wells on a basis that exceeds ordinary townsite drilling has become prevalent in many sections of the field. Single leases having more than one well for an average density of less than one acre are numerous, and approved locations scheduled to be drilled will materially increase the total.

Weekly survey of field activity since July 1 reveals an average of 90 rigs in operation. This average currently prevails. Completions for the past week consisted of 53 flowing and pumping wells, and a junked test. Independent operators accounted for 33 of these completions.

Nueces County's thirteenth field is discovered.

* * *

Rio Grande Valley is scene of deep drilling.

Corpus Christi.—Field No. 13 was opened in Nueces County November 10 when Southern Minerals Corporation brought in Richard King 2 as an oil producer in the Frio sand. The well, 5 miles north of Agua Dulce, had not been gauged, but was reported to be making several barrels of oil with some brackish water hourly after casing was perforated at 4017-20 feet.

The test is 3333.34 feet from the east line and 4700 feet from the north line of Block 6, King Farm Lots, and is about 2½ miles northeast of the Bentonville-King district. There is a possibility of it connecting with the King Ranch area, producing gas from a corresponding level.

The discovery well drilled to 6219 feet, but plugged back to 4060 feet, setting 7-inch casing. It logged the sand at 4017-35 feet, the lower portion showing water.

Rig is being moved immediately to Ida Walker 1, northwest corner of Section 40, about 2 miles southeast of the new producer. Sannix Oil Company's Nesloney 1, several miles northeast of the new producer, is drilling below 4900 feet.

Kleberg Tests Scheduled

Riviera Beach area of Kleberg County becomes a potential hot spot of the South Texas Gulf Coast. Two deep wells are to be drilled immediately on a geophysical prospect, the first spudding during the past week and the other location being staked. Superior Oil Company's Koch 1, Block 32, Section 36, is 7 miles east of Riviera and about 2 miles west of Riviera Beach. It is drilling at a shallow depth on a contract to at least 7500 feet. Magnolia Petroleum Company's A. Dietz 1 will be in Block 4, Section 7, and about 3 miles northwest of the Superior's test. A heavy leasing and royalty play has been under way in the general area for some time.

Development of the 5500-foot or discovery sand at Tomoconnor field, Refugio County, is in evidence, with Quintana Petroleum Corporation completing A. Reilly 5 as a producer through perforations at 5524-36 feet. The test flowed 756 barrels of crude daily through ¼-inch choke under pressures of 900 pounds on tubing and 925 pounds on casing. The first producer in the field was in this sand, but it later was deepened to the regular zone of the field. This new producer is a material west extension to the discovery well. Other wells in the field have cored the same sand, but completions have not been attempted.

Magnolia Petroleum Company's O. M. Lander 4, deep test in the northern portion of Hevser field, Victoria County, recovered 1200 feet of salt water on a drill stem test of sand at 6232-40 feet, and plugged back to complete in an upper sand. It also found a gas sand 5918-26 feet, which continued in a broken section to 5973 feet. Gulf Oil Corporation's Traylor is drilling below 5910 feet, another deep test for the field.

Plugging Back in Jim Wells

Magnolia Petroleum Company's A. A. Seeligson 7, in the extreme southeast corner of Jim Wells County, is plugging back to 6750 feet after reaching 8165 feet. It will gun perforate 7-inch casing set at 6795 feet and complete as a wet gas well. The test is one of the most interesting wildcats drilled along the Gulf Coast, having encountered numerous sands. It will open a new field.

The Texas Company was overcoming high gas/oil ratio in the Ganado field, Jackson County, by squeeze cementing. Mortgage Land & Investment Company 1, just southeast of production and third test in this area, was squeeze cemented through perforations at 5080-82½ feet and is being completed at 5085-5100 feet as an oil producer.

Hargrove & Echols' M. Strauss 1, on an interesting prospect north of Laward in Jackson County, has progressed to near 6000 feet and is not looking too encouraging. It topped the Discorbis at 4746 feet, had gas show in sandy shale topped 5143 feet, followed by a broken salt water sand at 5299-5425 feet.

Atlantic Refining Company's Porterfield 1-C, deep test in the McCampbell field, Aransas County, attempted to blow out at 8889 feet, then stuck drill pipe. It is being worked upon in an effort to recover the stem.

Deep tests are promising in lower Rio Grande Valley

McAllen.—Fohs Oil Company is attempting to open a new sand lens in the Frio zone in its first operation in the Samfordyce field, Hidalgo County. The test, F. B. Guerra 1, drilled to 3253 feet, set 5½-inch casing at 2952 feet and was perforated at 2904-8 feet in the entire sand section indicated by an electric formation tester. The Wheeler sand was found at 2846-52 feet and the Barlow horizon at 2951-54 feet, placing the new sand about midway between the two.

Another Hidalgo County test was in the spotlight. Y & B Oil Company's Waite Brothers, 5 miles southeast of Samfordyce, was coring in gas sand at 5400-20 feet after topping the Vicksburg formation somewhere between 5115-35 feet. The test is reported to be logging unusually high and is being closely watched.

Atlantic Refining Company was nearing its 8300-foot contract in American Rio Grande Land & Irrigation Company 1, 2½ miles southwest of Weslaco, but the well likely will be carried considerably deeper. It has had several shows of distillate and gas below 8000 feet.

Just north of the Kenedy-Willacy County line, Sal Viejo Oil Corporation's Garcia 1 is drilling ahead below 5232 feet, having made an electrical log at that level. In Willacy County, Shell Petroleum Corporation's deep test, Yturria 2, is coring at 7745 feet, while Magnolia Petroleum Company's Armendiaz 1 is going ahead below 6465 feet.

Oilton-Killam field among Mirando area's most active

Laredo. — Mirando district's fields provided 28 completions during the week to be the feature happening in this Jackson sand producing district. Eleven of the tests were in the Oilton-Killam sector of Webb County, while seven were in the Ezzell district of McMullen County and ten were in Duval County.

Wellington Oil Company of Delaware encountered difficulty in completion of J. F. Welder Heirs 8-D, attempting to open oil production in the Cole sand in Seven Sisters field, Duval County. The test flowed at the rate of about 10 barrels per hour through ⅜-inch choke under pressures of 225 pounds on tubing and 550 pounds on casing when the cement gave away and let in a large volume of salt water. It has been recemented and another completion attempt is underway. This well found sand at 1710-20 feet set 7-inch casing at 1714 feet.

Several wildcat and outpost wells in the Sweden District of Duval County are reaching interesting depths. Frank Gravis' Vaello 1, nearly one mile northeast of North Sweden field, was coring for the 3900-foot zone. Magnolia Petroleum Company's D. Ruiz 1, about six miles northwest of the field, was

drilling below 5457 feet and not looking too promising.

Darby Petroleum Corporation's deep test in the new Las Animas field of Jim Hogg County, failed to find anything at 3808 feet and plugged back to 1812 feet where casing was set. It is being completed through perforations in the regular Cole sand topped at 1765 feet, and will make a gasser.

Adams and Lefevre's Margaret Selman 2, Section 58, McMullen County, and 2000 feet southwest of Selman 1, is drilling below 1780 feet. The first test showed oil in the Government Wells sand around 2500 feet, but was abandoned after being carried to the lower horizons.

Ezzell Ranch continues its active drilling program with considerable of the new work being centered around the small blocks to the northeast of the field in Live Oak County. Several outpost wells have been commenced, which will add another mile to the northeast side of the field should they be productive.

The first Bruni sand attempt in the Oilton field, Webb County, failed when J. B. Blancard et al's Laurell Brothers 2 was abandoned below 3000 feet. Nearly ½ mile south of the field, Mills Bennett Production Corporation's Martin 2, found salt water in the field's regular sands and was carried to lower levels without favorable results.

SOUTH TEXAS Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
BASTROP COUNTY—		
Marts & Beavens, C. L. Lackey 1, 330 ft nel of 219-ac tr and 330 ft nwl of Joshua Gray sur	*	2228
BEXAR COUNTY—		
Ed. Auge, J. A. Hernandez 1, 155 ft wl, 1200 ft sl, 47.48-ac tr (blk 4205) F. L. Paschal sur No. 52, A-597, 2 mi e Von Ormy townsite	*	700
Jim Beard et al, Juan Barragon 6, James Simpson sur No. 59 (Von Ormy)	4	665
CALDWELL COUNTY—		
Chiquita Oil Co., E. I. Moses 1, G. Hinds usr (Salt Flats)	25	2662
H. W. Compton et al, Green Adkinson 1, James Pinchback sur (Branyon)	50	2125
Louis Crouch, J. J. Davis 1-B, Gerrin Hinds sur (Salt Flats)	55	2612
Edwill Oil Co., L. K. Brown Est. 4, Wm. Spillers sur (Buchanan)	50	2286
Ellmag Oil Corp., Willie Pope 1, 2196 ft s of Plum Creek, 150 ft sl of 134-ac tr in J. D Rains sur (¼ mi ne Salt Flats field)	20	2730
G. C. Fairtrace et al, S. McMahan 2, J. Pinchback sur (Branyon)	52	2425
F. & W. Drilling Co. (Frank R. Williams), H L. Rodenberg 1-B, Guadalupe College sur (ne Luling)	150	2231
Ed J. Keough, Martin Tiller 2, Gerrin Hinds sur (Salt Flats)	250	2458
Martell Pet. Co., J. M. Young 1-C, J. R. Miller sur (Branyon)	40	2181
McAlester Fuel Co., Callie Miears, 3-A C. M. Cannon sur (Buchanan)	34	2512
Ralph R. Ogden, W. E. Dinges 1-A, Squire Damon sur (Dale)	13	2205
Perot Oil Co., Hal Browne 3, J. R. Miller sur (Branyon)	70	2100
Potter & Snowden, Inc., R. M. Medlin 6, C. M. Cannon sur (Buchanan)	260	2222
Spokane-Oklahoma O&G Co., E. H. Putnam 1, John Henry sur (Luling)	*	2520
Taylor Ref. Co., F. M. Branyon 10-A, Dillard Cooper sur (Branyon)	63	2332
GUADALUPE COUNTY—		
D. A. Kramer, Johnson Anderson 1, Jacob C. Darst sur (Darst Creek)	*	2652
MIRANDO DISTRICT		
DUVAL COUNTY—		
Arkansas Fuel Oil Co., Mabel Rossi 8, sec 10, Sweden subd, Santos Flores grant (N. Sweden)	750	4770
Cox & Hamon, Cuellar Bros. 1, sur 117 (Hoffman)	120	2714
O. W. Greene 30, sur 118 (Hoffman)	9	2745
Yoakam-Green 3, sur No. 118-Hoffman)	55	2718
Rodney Delange, P. T. Wright & Vela, sur 72 (Loma Novia)	50	2634
Reynosa Oil Co., F. G. Wilson et al 7, sec 9, Sweden subd, Santos Flores grant (N. Sweden)	500	4783
Russ Pet. Co. et al, A. Farias 10, sec 9, Sweden subd, Santos Flores grant (N. Sweden)	500	4819
Standard of Kansas, Lillian Parr 5, Parr tract, San Andres grant (N. Sweden)	475	4768
Mabel Rossi 6, blk 10, Sweden subd, Santos Flores grant (N. Sweden)	500	4795
Southland Life Ins. Co. 4, sec 12, Ball Ranch, Santos Flores grant (N. Sweden)	500	4821
Woodley Pet. Corp., Merle West 1, sec 10, Sweden subd, Santos Flores grant (N. Sweden)	400	5374
McMULLEN COUNTY—		
Alabama Minerals, Margaret Gordon 2, 1650 ft sl & wl A. B. & M. sur No. 127, 28 mi s Tilden	*	2416
Chiquita Oil Co., H. L. Lark (Taylor) 1-A, E W. B. Scrugham sur (Jacob)	35	972
Loma Oil Co., L. Jacob Corp. 12-B, G.H.&H. sur (Jacob)	25	1064
V. G. Schimmel et al, L. Kountz Est. 1, 990 ft w, 330 ft s from se/cor nw¼ of sec 5 (640-ac lse), E. T. RR. Co. sur on McMullen-Duval line	*	2370
WEBB COUNTY—		
Bridwell Oil Co., Maria G. Martin 9, T. Guerra sur No. 2167 (Oilton)	135	1909
Maria G. Martin 10, T. Guerra sur No. 2167 (Oilton)	125	1906
Cox's Hamon, A. A. Garcia 1, C. Hughes sur No. 262 (Oilton)	135	1913
Maria G. Martin 1, sur 1005 (Oilton)	115	1938
French Oil Corp., J. G. Perez 4, sur 1007 (Killam)	60	1998
Gypsy Oil Co., Maria G. Martin 5-A, sur 2167 (Oilton)	181	1921
Maria G. Martin 6-A, sur 2167 (Oilton)	162	1934
O. W. Killam, A. M. Bruni Est. 59, sec 8, Foltz subd, Mariano Arispe grant (Cole-Bruni)	95	3417
D. G. Garcia 19, sur 786 (Killam)	100	1988
Rowan and Hope, Laurell Bros. 17, sur 1006 (Oilton)	*	1982
Smith & Hamill, Maria G. Martin 17, sur 2167 (Oilton)	¶2 & 45	1896
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic Ref. Co., L. L. Porterfield Est. 5-B, lot 6, blk 11 (McCampbell)	175	7210½
Landreth Prod. Co., W. G. McCampbell 7-A, lot 1, sec 39 (McCampbell)	225	7125
Warren Oil Corp.-Carmos Drlg. Co., C. W. Klienecke 1, lot 12, sec 9 (McCampbell)	375	7160
KARNES COUNTY—		
W. L. Goldston, Mrs. R. A. McKinney 1, R C. Ballard sur (S. Burnell)	*	3636
Luling O&G Co., C. W. Boyce 9, S. D Still sur (S. Burnell)	550	3670
LIVE OAK COUNTY—		
Lonnie Glasscock, H. S. Bonham et al 2, A. Glavecke sur No. 1 (Ezzell)	200	1458
H. S. Bonham et al 3, A. Glavecke sur No. 1 (Ezzell)	200	1467
Huisache Prod. Co. (Bob Holland & H. Coquat), W. C. Matikin 3, A. Glavecke sur No. (Ezzell)	325	1512
NUECES COUNTY—		
Crown Central Pet. Corp., Sally Page 6, H. L. Kinney sur (Saxet)	165	4413
Greta Oil Corp., T. H. Isensee 1, C. Land sur 404 (Saxet)	375	4910
Humble & Barnsdall, Mary C. Collier et al 2, lot 30, blk 48 (Flour Bluff)	500	6652
Burton Dunn 2, lot 8, blk 41 (Flour Bluff)	*	6760
J. T. Smith 1, lot 9, blk 49 (Flour Bluff) (perf 6633-55)	500	6660
Seaboard, James P. Luby No. 6, Cantillo Ditch Colony sur (Luby) (perf 5055-58¼)	475	5073
REFUGIO COUNTY—		
Hewitt & Dougherty, M. F. Lambert 61, J. M. Swisher sur No. 8 (Tomoconnor-Greta)	1320	5917
Illinois Pet. Co. (F. W. Shield), M. H. Ryals Est. 1-C, 220 ft wl, 270 ft nl of lse in Refugio Town grant (perf 6780-86 ft)	¶2 & 150	7141
L. A. Nordan, Tom O'Connor 3, James Hewitson sur (Tomoconnor-Greta)	1250	5919
Quintana Pet. Corp., Tom O'Connor 21-C, J. F. Carr & J. O'Connell sur (Tomoconnor) (perf 5740-46 ft)	2500	5949
Annie Riley 5, M. J. Ximines sur (Greta-Tomoconnor) (perf 5526-34 ft)	1675	5955
United Prod. Corp., F.V.W. Heard 18, lot 17 (Refugio) (perf 3445-54 ft)	¶120	4925
SAN PATRICIO COUNTY—		
Humble, J. W. Flinn Est., Rueben Ross et al sur (Taft)	650	3985
Plymouth Oil Co., E. H. Welder 84-C, sec 70 (Plymouth)	500	5531
VICTORIA COUNTY—		
Union Oil, Claude A. Keeran 7, M. de Leon sur (Keeran)	*	6004

*Failures; †Junked; ¶Million cu. ft. gas.

Disappointment at wildcat in Balcones fault zone

San Antonio.—Milam County's bid for Edwards limestone production was virtually eliminated for the present when Kingdorr Exploration Company's M. Stidham et al 1, J. P. Jones Survey, made salt water after being acidized with 4000 gallons. The test is in the Edwards limestone at 3765-3816 feet. It has been plugged back to 3776 feet for another test. The well is on the Jones Prairie prospect in the northeastern portion of the county.

Wellington Oil Company of Delaware was shut down for orders at 1628 feet in A. Koepp 1, just northeast of New Berlin in Guadalupe County. It topped Austin chalk at 1520 feet and has oil shows in the section. It may set casing for a completion attempt. Several wells drilled in the area have had showings in this formation.

In Frio County, Pagenkopf & Jamison may drill ahead to the Edwards limestone in Houston Estate 1, discovery well of the Frio Town eld. It has been pumping about 200 barrels of fluid per day, only 10 percent oil, after plugging back from 2651 feet to 2605 feet.

Wildcatting campaign begins in county of Pettus district

Beeville.—An intensive wildcatting campaign is being commenced in Live Oak County, one which appears to have a far-reaching effect on this sector of the Pettus district. The territory is receiving a lot of work on general trend with the new Ezzell Ranch field, which is proving to be one of the most prolific shallow areas in South Texas. Wells are being spotted along the northern sections of the county in an effort to pick up the same sands as in the above mentioned field.

In addition to the shallow work, a number of wildcats have been staked or deals are in process for deeper tests, contracted to the Yegua at depths ranging from 3500 to 6000 feet.

First production in the Mount Selman in this portion of South Texas will result if Ivan Howard is successful in completing F. P. Moczygemba 1 as a producer. The test, 2 miles southwest of Falls City in Karnes County, is bailing at 2178 feet. It topped a sand and shale section at 2159 feet, casing being set at 2136 feet. The sand is described as being in the Sparta or Queen City zone.

Orange well that failed to flow to be tested again.

* * *

Cedar Bayou well yields salt water along with oil.

Houston.—Tillery and Ryan's Chesson 1, southwest flank test at Orange field, Orange County, William Dyson Survey, made a production test last week, and the well failed to flow commercial oil from the new Frio sand. Chesson 1 had showed 12 stands of clean 33 gravity oil on a drill stem test at 5940 to 5946 feet, the bottom of the hole.

At Cedar Bayou, Chambers County, Merit Oil Company and Ingot Oil Company's Wright 1, C. Smith Survey, was making an estimated five barrels of fluid daily, 10 percent salt water, from Marginulina sands at 6433 feet.

Genoa Test Abandoned

North of Friendswood and at Genoa prospect, Harris County, Circle Oil Company abandoned Ross 1, George Dedrick Survey, at 6514 feet, after running an electrical logging device. Top of the salt water sand was logged at 6187 feet. The well was running lower structurally than other wells drilled in the area, and according to leading geologists, it did not show evidence of faulting.

It appears that Hastings field has just about reached its peak of development. Last week, on the southwest flank, Stanolind Oil & Gas Company abandoned Autrey 6 at 6160 feet in salt water sands. Top of the sands were logged at 6040 feet.

Six thousand feet west of production at Sandy Point, Brazoria County, H. J. DeArman's Edmundson 1, D. Talley Survey, showed salt water on a production test, and was being plugged back for another test at the end of the week. Last week casing was perforated with 12 shots from 6505 to 6509 feet, and cement retainer was set below the perforations.

Harrison & Abercrombie's Smith 1, Old Ocean field, C. Breen Survey, Brazoria County, was preparing to make a production test at 10,638 feet. Five-inch casing was cemented at 10,630 feet and will be perforated.

The deepest active drilling well in the Texas Gulf Coast is Sun Oil Company's Bayshore 1, L. Goodwin Survey, Palacios field, Matagorda County. Last week the well was down to 11,260 feet in shale and was drilling ahead.

More Oil from New Spurger Sand

The second well to be completed in the new sand at Spurger field, Tyler County, is Republic Production Company's Hurd 5, N. Hurd Survey. It made 32 barrels per hour through a quarter-inch choke with a tubing pressure of 1350 pounds and a casing pressure of 400 pounds, from Sparta formation at 7710 feet.

Shell Petroleum Corporation is preparing to kill Texas Public Service 4 at Nome field, which blew out, caught fire, and cratered in a new sand, east of the field some time ago. The operator's Texas Public Service A-4, relief well has been drilled to the bottom of the burning well, and 5-inch casing has been set at 4774 feet. It will be perforated and water will be pumped into the gas sand which caused the well to blow out.

Amerada Petroleum Corporation and Stanolind Oil & Gas Company made a semi-wildcat location at Fairbanks field, Harris County, last week. E. W. Mills 1 is 1399 feet north and 1260 feet west of the southeast corner of a 320-acre tract, in the A. Larson Survey.

TEXAS GULF COAST
Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
ANAHUAC—		
Humble, Boyt 5	¶¼	7030
Middleton 27	672	7085
ESPERSON—		
General Crude, Fee 35	259	3350
FRIENDSWOOD—		
Humble, DeGeorge 1	528	6080
HASTINGS—		
Humble, Alexander 2	648	6080
Beers D-2	528	6070
Geisling 2	600	5520
McDeed 2	587	6080
Producers Investment Co., Alexander 2	638	6081
Stanolind, Autrey 6	*	6160
Curkeet A-25	557	6110
Massey 2	607	5765
Moore C-4	620	6080
L. D. Shaw 10	612	6080
Shyrock 2	515	5835
MAGNET—		
Humble, Cockburn 3	120	5540
Texas Crusader Oil Co., Cockburn 3.	140	5540
MYKAWA—		
H. C. Cockburn, Minnetex 2	329	4876
PALACIOS—		
Atlantic, Palacios State Bank 2....	*	8675
SANDY POINT—		
H. J. DeArman, Fite 3	96	6496
Stanolind, Fite 2	57	6498
SOUTH BAY CITY—		
Hammond Exploration Co., Thompson 1	212	9176
SPINDLETOP—		
Unity Oil Co., Oakwood Realty Co. 4	192	3192
SPURGER—		
Republic Prod. Co., Hurd 5	612	7710
TOMBALL—		
Humble, Osborne 1	552	5560
C. Rudal 2	311	5567
Shell, Stokley 1	*	5601
WITHERS—		
Texas Co., Pierce Estate C-39	¶1	5536
Tompson 3	290	5552
HARRIS COUNTY—		
Circle Oil Co., Ross 1, Genoa area, G. Dedrick sur	*	6514

*Failures; †Junked; ¶Million cu. ft. gas.

Four potentially productive wildcats hold attention.

* * *

Timbalier and Raceland are among promising prospects.

Lake Charles.—Interest in the Louisiana Gulf Coast last week continued to center around four wildcats which have already indicated they would open new producing territories.

Lafourche probably is the most active parish in the district, offering two of the four wildcats that have indicated they would open new fields. On the Timbalier Bay prospect, Section 36-23s-21e, Gulf Oil Corporation's State PP 3 has about completed geophysical work at 8728 feet in salt and will probably plug back soon to test sands showing oil around 6749 or 6820 feet. These two sands showed oil in commercial quantities when drill stem tests were made.

North of Timbalier Bay and at Raceland prospect, Lafourche Parish, Amerada Petroleum Corporation and Louisiana Land & Exploration Company was drilling below 9320 feet last week in South Coast Corporation 1, Section 34-15s-19e. This wildcat indicated it would open a new field when a sand was logged at 7238 feet, showing four ohms and 155 milivolts on an electrical logging device.

On the Quarantine Bay prospect, Plaquemines Parish, Gulf Oil Corporation ran a string of 9⅝-inch casing in State QQ 3, Section 17-19s-17e, to 7144 feet to protect the hole. State QQ 3 will be drilled deeper. A drill stem test on

this wildcat at 7134 feet showed 1500 feet of 34 gravity oil.

An interesting wildcat but which has been given little attention, due to the length of time it has been drilling, is The Texas Company's State Bateman Bay 1, Section 21-16s-12e, St. Mary Parish. The well was drilled to 11,879 feet, and at that depth circulation was lost. The hole was washed to 11,450 feet, and was then cemented back to 11,050 feet. A string of 5-inch casing, while being run, became stuck at 10,475 feet. At the end of the week the crew was pulling on the stuck pipe.

State Bateman Bay 1 indicated it would open a new producing district some time ago, when side wall samples were taken and an electrical logging device showed 66 ohms and 80 milivolts at 9600 feet, and 18 ohms and 100 milivolts at 9900 feet. Operators will probably test these sands as soon as casing is set.

More Salt at Marchand

The second wildcat to encounter salt on the Marchand salt dome, Lafourche Parish, is William Helis' City of New Orleans 2, Section 19-23s-23e. Salt was logged at 7959 feet, and at 7970 feet the operators were still in the formation. A sand showing oil was encountered in this wildcat from 7322 to 7325 feet.

North of production at Lake Long, Lafourche Parish, Fohs Oil Company and Pilgrim Exploration Company were fishing for liner at 9537 feet in State 3, Section 77-17s-19e, last week. After making a production test of broken sands showing oil from 9495 to 9537 feet which showed salt water, the crew lost the liner in the hole. State 3 will be plugged back to 9477 feet, where 7-inch casing was set, and the well will be redrilled down to the new sand.

At Jeanerette field, St. Mary Parish, Herton Oil Company worked over Banta and Roanes 1, Section 40-13s-9e, and completed it in a new sand for the field. It was perforated with 36 holes from 10,272 to 10,292 feet, and came in flowing 180 barrels of 36.6 gravity pipe line oil daily, through a 3/16-inch choke. Tubing pressure was 3200 pounds. Banta and Roanes was completed at 10,412 to 10,424 feet some time ago for 738 barrels of fluid daily, 15 percent salt water and the balance oil. Because of salt water, the operators were forced to kill the well, and they completed it in a new sand.

South of Sulphur, Calcasieu Parish, Union Sulphur Company's J. A. Bell 1, Section 10-10s-10w, cored a fresh water sand last week from 7828 to 7833 feet, and at the end of the week operators were coring in shale at 7965 feet.

At Lake Washington field, Plaquemines Parish, Humble Oil & Refining Company is preparing to test a new sand in Cockrell Moran 25, Section 35-20s-26e. Sand showing oil was logged from 6337 to 6356 feet, and 7-inch casing was set at 6347 feet. The well failed to flow when washing was commenced, and last week the crew was swabbing.

Two deep wildcats on geophysical structures are high.

* * *

Lisbon field given quarter mile eastward extension.

Shreveport.—Two deep wildcat tests in North Louisiana located on geophysical structures, checked high last week on important contact points and were drilling ahead.

In Bienville Parish, Gulf Oil Corporation's Goodpine Oil Company 1, SE SW 25-14n-8w, logged top of massive anhydrite at 5303 feet, within 25 feet of where it was expected from geophysical picture, and was coring ahead below 5440 feet in shale.

In Union Parish, Joe Modisett was preparing to drill plug in 9⅝-inch casing at 4358 feet in Frost Lumber Company 1, NE SW 14-21n-1e, which logged top of Travis Peak at sub-sea depth of 3862 feet as compared to a contact point of sub-sea depth of 4112 feet in a test in Section 27-21n-1e. This is a 7000-foot test.

In Bienville Parish, one mile south of the two gas distillate producers in the Bear Creek district, H. L. Hunt and Seaboard Oil Corporation were testing Federal Land Bank 1, C S½ 10-16n-6w, in which 7-inch casing was cemented at 6857 feet; total depth is 6928 feet. This test apparently will be another gas-distillate well as it checked normal with the other two. Some porosity was logged from 6845 to 6874 feet but the best was from 6848 to 6858 feet.

Three wildcat blocks "in the trend" in central Louisiana were assembled last week, with several large tracts also leased in North Louisiana.

In Caldwell Parish, around Section 22-14n-4e, in an area recently surveyed with seismograph, Southern Carbon Company has assembled an 8000-acre block. In Rapides Parish, Ted Madison of Monroe, Louisiana, has taken 10,000 acres in Townships 2 and 3 north, Range 1 west, and in the same parish Texas Company has leased over 4500 acres in Township 3 north, Range 2 east. In the small Cheneyville field, Rapides Parish, Tide Water Associated leased the 367-acre J. S. Ewell tract in Township 1 south, Range 2 east.

In Franklin Parish, Continental Oil Company has taken a six months geophysical exploration option on 6000 acres in Township 12 north, Range 8 east. In DeSoto Parish, Southworth Petroleum Company has assembled a 3500-acre block around Section 1-12n-16w.

In Lincoln Parish, Standard Oil Company of Louisiana has taken a 6500-acre block around Townships 17 and 18 north, Ranges 1 and 2 west. Magnolia Petroleum Company in the same parish has been taking scattered leases in Township 19 north, Range 2 west, after checking the area with seismograph.

In Webster Parish, east of Cotton Valley deep production, Stanolind Oil & Gas Company has purchased 400 acres in Sections 30 and 31-21n-9w. It recently acquired 720 acres around Section 36-21n-10w. Harry Hanbury and associates are reported to have leased 60 acres in Section 27-21n-10w from R. W. Norton.

Louisiana issues 16 permits for new wells

Shreveport.—Sixteen drilling permits were issued last week by the minerals division, Louisiana Conservation Commission, evenly divided between North and South Louisiana. The eight in North Louisiana were divided among the following parishes: Bienville 1; Bossier 1; Caddo 3, including 3 in Rodessa; Claiborne 3, 1 in Lisbon. The eight in South Louisiana were divided among the following parishes: Ascension 1; Cameron 1; Jefferson Davis 2; La Fourche 2; Plaquemines 1; St. Martin 1.

189 Wells at Rodessa showing salt water

Shreveport.—A total of 189 wells in Rodessa were showing varying amounts of salt water on November 1. Of these, 137 were on the Louisiana side of the field, 47 in Cass County, Texas, and 4 in Marion County, Texas. One in Miller County, Arkansas, was showing .6 percent water. Of those on the Louisiana side showing water, 11 were off

SOUTH LOUISIANA Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
ABBEVILLE—		
Continental, Brookshire 1	480	7890
BAYOU BLUE—		
Humble, Baist Cooperage Lbr. Co. 1	*	lcn.
CHOCTAW—		
Standard, Wilbert 10	*	5814
EDGERLY—		
Louisiana Crusader, Miller Bros. 1	*	6325
IOWA—		
Magnolia, Waite 12	246	4426
JEANERETTE—		
Herton Oil Co., Banta & Roanes 1 (wo)	180	10292
JENNINGS—		
Iles Pet. Co., Jennings Heywood 1	30	1820
LAFITTE—		
Texas Co., State Bayou Norman 1, td 12,115 ft, pb made	1736	9630
POTASH—		
Humble, Orleans Levee Board 18	*	917
VALENTINE—		
Pan American Production Co., Harang 10	648	6144

*Failures; †Junked; ¶Million cu. ft. gas.

production, 17 were closed in by the conservation commission, and 1 was listed as "dead." Of the 47 in Cass County, Texas, 1 was closed in, 1 was being worked over, and 6 were off production.

Nine wells in Cass County found to be producing in excess of their gas allowable in order to obtain their oil allowable have been closed in by the Texas Railroad Commission.

The weighted average bottom hole pressure for the Texas side of Rodessa rose 19 pounds in October over September, mounting to an average of 1,179.85 pounds. Total acreage listed as proven for oil in Cass and Marion Counties is given as 6,420.48 acres.

Two new producers completed at Lisbon

Shreveport.—One of two producers completed last week in the Lisbon field, E. W. Gill and associates' S. M. English 1, C S½ NE SW 29-21n-4w, extended production ¼ mile farther east. This well was completed at total depth of 5150 feet, flowing 160 barrels in 15½ hours through 12/64-inch tubing choke, with tubing pressure 120 pounds and casing pressure 525 pounds. It was completed without acidization.

At present 10 tests are drilling in Lisbon, with 9 other rigs, derricks and locations. One well is being standardized. Only one new location was made there last week.

Activity, however, is expected to mount soon as Caddo Pipe Line Corporation (Grogan Oil Company) began running oil from Lisbon last week, through its newly completed 6-inch line. It will buy 7000 barrels daily. It posted the regular price of $1.10, despite rumors that only 90 cents would be paid.

Trinity test located in Waskom field

Shreveport.—Arkansas-Louisiana Gas Company has derrick up and has let drilling contract for a Trinity test, to go at least 6000 feet, to Holcomb & Thomasson of Shreveport, the test to be located in the Waskom shallow field, Harrison County, Texas.

The location is C. M. Abney 1, Eason Wilson Survey, 2 miles from the town of Waskom. Arkansas-Louisiana Gas Company has approximately 12,000 acres in this district.

Danciger Oil & Refining Company was arranging to plug back and perforate casing around 5100 feet in J. W. Tatum 1, Alfred Bissell Survey, Panola County wildcat, after testing a hole full of salt water when casing was perforated last week at 5253 to 5263 feet.

Testing south outpost in Jefferson area

Shreveport.—Arkansas-Louisiana Gas Company started testing last week at Neilon 1, Thomas Gillespie Survey, Marion County, Texas, 1 mile south of production in the Jefferson end of Rodessa. Total depth is 5996 feet. This test topped Henderson sand at 5927 feet, 9 feet lower than the same contact in the Jefferson discovery well, Holcomb & Thomasson's Lizzie Henderson 1, R. Bennington Survey. Elevation of Neilon 1 is 200 feet.

Three-fourths of a mile northwest of production at Jefferson, George Barham's W. C. Whitfield 1, R. Bennington Survey, after testing oil and salt water in the Gloyd, topped at 6096 feet, total depth 6105 feet, is plugging back to the Henderson sand topped at 6074 feet and cased off with 5½-inch casing cemented at 6094 feet. Elevation is 298 feet. What effect showing of salt water in the Gloyd in this test will have on three locations made farther north is not known. W. C. Whitfield 1 flowed as high as 10 barrels of oil hourly in the Gloyd.

South of Jefferson, Shell Petroleum Corporation has a seismograph unit working, and Arkansas-Louisiana Gas Company has sent a core drilling unit into the J. Hanks Survey in the wake of a recent shooting campaign there.

NORTH LOUISIANA
Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
CADDO PARISH (Rodessa)—		
Freeman W. Burford, Terry 1, 2-23n-16w	950	6049
Standard Oil Co. of La., McCoy 3, 10-23n-16w	750	5959
Grady H. Vaughn, Yates 1, 2-23n-16w	900	6097
CLAIBORNE PARISH (Lisbon)—		
E. W. Gill et al, S. M. English 1, 29-21n-4w	225	5150
Sloan & Zook, Patton 4, 1-20n-5w	225	5292
CLAIBORNE PARISH (Sugar Creek)—		
Union Producing Co. et al, Treadwell-Hawk 1, 6-19n-5w (see comp)	¶15	5751
WEBSTER PARISH (Cotton Valley)—		
Ohio Oil Co., Coyle & Cox 1, 23-21n-10w	330	8119
A. G. Oliphant, Sam Banks 1, 34-21n-10w	288	8187

*Failures; †Junked; ¶Million cu. ft. gas.

SOUTHEASTERN STATES

Wildcat blocks assembled in central Mississippi

Jackson, Miss.—Three wildcat blocks in central Mississippi were reported assembled last week. In Jasper County, around Section 31-1n-13e, on the northwest flank of the Hatchetigbee anticline, Gulf Oil Corporation has assembled a block, following geophysical work in the area.

In Scott County, George B. Hightower and W. W. Jones have assembled over 32,000 acres in townships 5, 6 and 7 north, ranges 7 and 8 east. In Hinds County, around Section 29-6n-1w, about 10 miles west of the Jackson field, Lamar Easterling, Trustee, has assembled a block of 6000 acres, which carries a drilling obligation to start operations by November 20, 1937.

MISSISSIPPI
Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
HANCOCK COUNTY—		
American Sulphur Co., Carlos Ladner 1, 17-9s-14w	*	2502

*Failures; †Junked; ¶Million cu. ft. gas.

Florida exploration planned

Jacksonville, Fla. — Negotiations are under way between Benedum and Trees Oil Company of Pittsburgh, Pennsylvania, and the Consolidated Naval Stores Company for development of 1,200,000 acres owned by the latter company, part of which is in LaFayette County, Florida, and the other just north of Gulf Oil Corporation's large block under geophysical exploration in the Everglades section of the southern part of the state.

ARKANSAS FIELDS

Miller County's Rodessa extended into Louisiana

Shreveport, La.—Although the Miller County, Arkansas, end of Rodessa added only two new wells last week to bring the total there to 38, that offshoot of the field was extended south into Caddo Parish, Louisiana, by two wells in Section 2-23n-16w, the first wells for that section.

Freeman W. Burford's Terry 1, NW NW 2-23n-16w, was completed at 6049 feet flowing 60 barrels the first hour through one-inch tubing choke, and Grady H. Vaughn's Yates 1 was at 6097 feet flowing 52 barrels per hour.

The wells added in Miller County were Grasty and associates' Treadway 1, SW SE NE 10-20-28, flowing 52 barrels per hour through ¾-inch tubing at 6148 feet and Freeman W. Burford's Capps E-1, N½ W½ W½ 13-20-28, flowing 25 barrels per hour through half-inch tubing choke at 6028 feet.

Four new locations

El Dorado, Ark.—Four drilling permits authorized last week by the Arkansas Board of Conservation were as follows:

Dallas County—L. S. Gist, Goodgame 1, 360 feet north and 600 feet east SWc SW NW 26-10-16.

Franklin County—Ozark Natural Gas Company, J. H. McDonald 2, 290 feet south and 650 feet west NEc NE SE 13-8n-29w.

Miller County—J. A. Cararas, E. B. Mitchell 1, 224 north and west SEc SW NW NW 11-20-28.

Union County — Phillips Petroleum Company, First National Bank 1, 330 north and west SEc NE SW 17-18-17.

ARKANSAS
Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
MILLER COUNTY (Rodessa)—		
Freeman W. Burford, A. A. Capps E-1, 13-20-28	480	6028
Ahern 3, 10-20-28	360	6085
G. G. Gerald B-2, 15-20-28	400	6070
East Texas Ref. Co., Capps A-1, 14-20-28	125	6089
R. H. Long, J. P. Greer 4, 10-20-28	1200	6118
Grasty et al, Treadway 1, 10-20-28	900	6148
H. L. Hunt, Womack 4, 10-20-28	250	6081
SEVIER COUNTY—		
C. & M. Oil Co., Arnold 1, 23-9-30	*	996

*Failures; †Junked; ¶Million cu. ft. gas.

Two Schuler deep tests log top of "big sand"

El Dorado, Ark.—Two tests in Schuler field, Union County, Arkansas, where one lower Marine oil well and one Permian lime gas distillate well were recently completed, logged top of the "big sand" last week.

Alice Sidney Oil Company's Morgan 2, Section 18-18-17, was reaming to 7554 preparatory to coring ahead after logging top of the big sand at 7516 feet. Phillips Petroleum Company's Ed Gan 1, Section 18-18-17, was also coring ahead after logging the same horizon at 7530 feet.

El Dorado.—Standard Oil Company Louisiana's J. P. McKean 1, SW SW 8-16-22, Columbia County, Arkansas, Permian wildcat oil producer that drilled ahead into top of the water table at 7280 feet last week, prepared to plug back and recomplete at one of the productive levels in the Permian topped at 7197 feet.

Columbia County continues to get a great deal of leasing activity. Magnolia Petroleum Company is leasing just north of the Louisiana line, in Township 20, Range 21, and in Township 18, Range 22, R. W. Turnbow is taking acreage. Mid - Continent Petroleum Company is taking scattered leases in Township 16, Range 20, and Robert Bowles is reported to have sold a half-interest in a 5000-acre block near Emerson to Selby Oil & Gas Company of Tulsa. Shasta Oil Company is leasing around Section 18-16-22, LaFayette County.

NEW MEXICO

Completion of outpost test delayed to empty tanks.

* * *

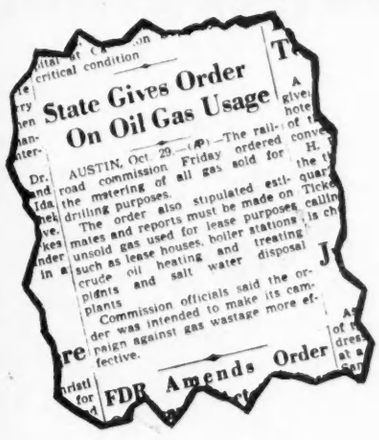
Test 2 miles northwest of Mattix will be producer.

NEW MEXICO Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
Nash & Windfohr, Stevens 4-A, c sw sw 13-17s-30e	350	3425
LEA COUNTY (Eunice)—		
Stanolind, Gilluly 1-B, c nw sw 25-20s-36e	750	3854
T. P. Coal & Oil Co., State 6-A, Acct. 2, c nw se 7-22s-36e	1920	3826
LEA COUNTY (Langlie)—		
Culbertson & Irwin, Inc., J. B. Humphrey 2-A, ne ne nw 3-25s-37e	552	3474
LEA COUNTY (Penrose)—		
Rowan Drlg. Co.-N. G. Penrose, Elliott 1-B, c ne nw 9-22s-37e	75	3747
LEA COUNTY (Rhodes)—		
Great Western Producers, Inc., State 1, c se se 16-26s-37e	¶50	3277
LEA COUNTY (Skelly)—		
Skelly Oil Co., Ellen Sims 3, c se se 3-23s-37e	90	3675

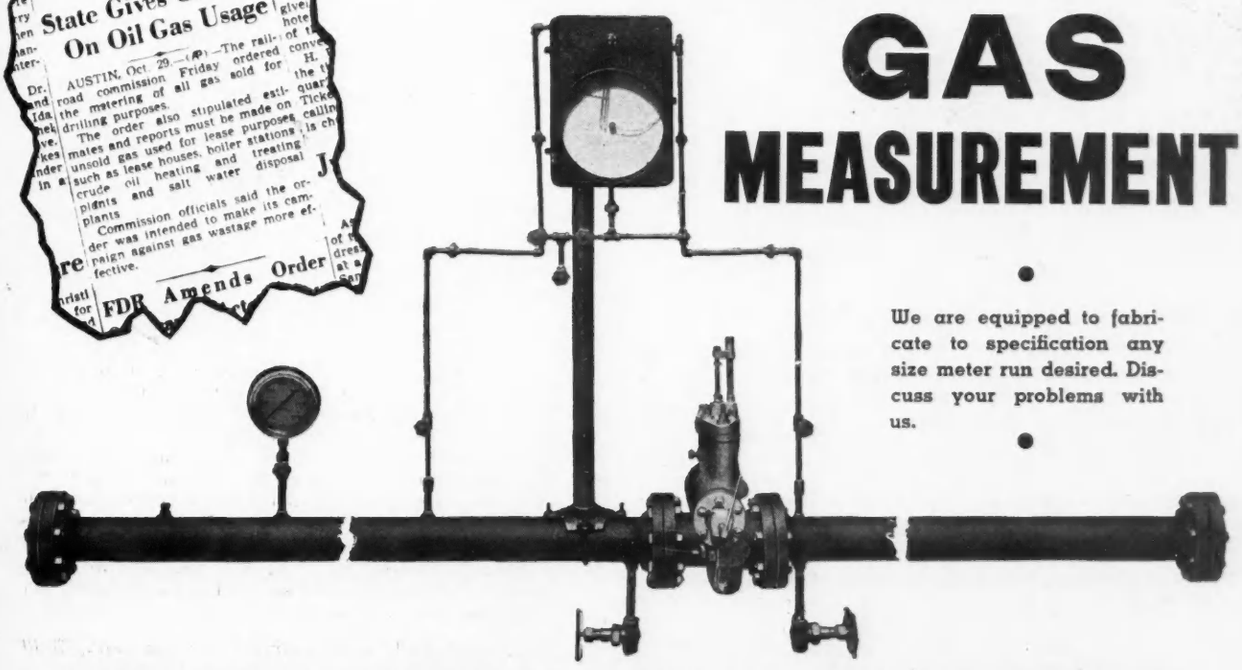
Hobbs, N. M.—Progress on The Texas Company's State 1-L, C SW NE 1-18s-34e, located 3¼ miles south of production in the Vacuum pool, Lea County, was temporarily halted last mid-week to empty lease tanks after flowing 440 barrels natural in 25 hours. The hole is bottomed at 4385 feet, with an elevation of 3998 feet, and is about 100 feet above the best oil horizon logged by completions in the north portion of the large structure. Cable tools are being used to complete State 1-L, and first oil production made its appearance at 4297 feet.

Expiration of lease contracts on state fee in the Vacuum area during the fore part of 1938 will undoubtedly cause development to spread. Reports indicate that Skelly Oil Company will be the first to attempt to perpetuate holdings, with location made for State 1-J, C NE


State Gives Order On Oil Gas Usage
AUSTIN, Oct. 29—(AP)—The railroad commission Friday ordered conservation of all gas sold for drilling purposes.
The order also stipulated estimates and reports must be made on Ticket unsold gas used for lease purposes such as lease houses, boiler stations crude oil heating and treating plants and salt water disposal plants
Commission officials said the order was intended to make its campaign against gas wastage more effective.
FDR Amends Order

WE SPECIALIZE IN

GAS MEASUREMENT



We are equipped to fabricate to specification any size meter run desired. Discuss your problems with us.

MAINTENANCE ENGINEERING CORP.

3611 Clinton Drive — Telephone P-3135, L.D. 409 — Houston, Texas

NW 31-17s-35e, about 1½ miles northeast of The Texas Company's producer.

Crandall, Maxwell & Osmond's Maxwell 1, C SE SE 2-11s-36e, wildcat near Ranger Lake and the only active project in northern Lea County, was approaching a decisive depth in drilling gray lime at 4902 feet. Rainbow shows of oil have been logged at intervals since entering the lime section at 4252 feet, with an elevation of 4044 feet.

New operations in Lea County continue on a reduced basis. Only five new projects were announced the past week, and they were distributed among five areas.

Mattix Extension Certain

Repollo Oil Company's R. W. Cowden 1, NEc 31-23s-37e, two miles northwest of nearest production in Mattix field, drilled to 3714 feet, or 393 feet sub sea without showing water, and will be acidized or shot. This outpost flowed by heads while drilling the regular oil zone at 3500-3600 feet, and is certain to make a commercial producer. Repollo Oil Company has rigged up to drill Powhatan Carter 1, SW SW NE 9-24s-37e, offsetting production in Mattix.

Continental Oil Company et al's Britt 1-B-10, C W½ SW SW 10-20s-37e, east edge of Monument field, tested 50 percent water with a small fluid level on gas lift after acid treatment and 300-quart nitro shot at 3755-3875 feet. It is bottomed at 310 feet sub sea, and near the water table. The tight lime was due to be acidized again late last week.

Cities Service Oil Company's Closson 8, C W½ NE NE 6-22s-36e, was the only addition given the Eunice field.

Amerada Petroleum Corporation's J. G. Hare 1, C SW SW 33-21s-37e, offsetting production in the Penrose area, showed very little free oil in drilling to 3760 feet, and will be acidized. This company's Stuart 1, C W½ NW NW 14-25s-37e, Langlie field, tested one barrel oil per hour at 3433 feet, and is waiting nitro shot. Culbertson & Irwin, Inc.'s J. B. Humphrey 4-A is a new project for the latter field. Stanolind Oil & Gas Company has started operations on L. A. Thompson 1, center lot 1, 6-21-37e, and C. Farnsworth 29-B (NW), C SW NW 7-26s-37e, located in Hardy and Eaves areas, respectively.

ROCKY MOUNTAIN FIELDS

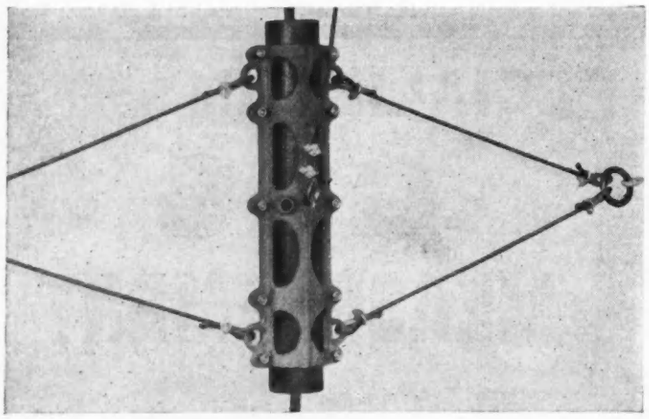
DRILLING BLOCKS IN POWDER RIVER BASIN

Approximately 750,000 acres of prospective oil lands have been assembled into 12 large drilling blocks in the center of Powder River Basin, around whose rim is located Wyoming's largest light oil fields. The blocks are: No. 1, Cole Creek, General Petroleum Corporation; No. 2, Irvine Structure, Elbe Oil & Development Company; No. 3, West Shawnee area, Wyoming-Southern Oil Company, Chadron-Osage Oil Company, Carter Oil Company, Ohio Oil Company and others; No. 4, Beaver Dome, Thomas H. Carney; No. 5, Harney Creek, A. M. Becklinger; No. 6, East Lance Creek, Continental Oil Company; No. 7, Northeast Lance Creek, B. J. Erwin, Lawrence Johnson and John B. Barnes; No. 8, Ant Hills structure, Continental Oil Company; No. 9, North Lance Creek, Fred Goodstien; No. 10, East Box Creek, Lester Esterline; No. 11, West Box Creek, Roy Thacher; and No. 12, Pumpkin Buttes, Carter Oil Company and Phillips Petroleum Company.

Selective completion getting popular in Wyoming fields

Casper, Wyo. — Considerable attention is being given to selective completion in the Rocky Mountain district. Operators in some fields are following the lead set by The California Company in Quealy Dome field and are plugging back inside the casing and then perforating to allow completion from a higher sand.

Several wells in the region this week are being perforated for completion in this manner. One is Sinclair-Wyoming Oil Company's Muskrat 2-C, SW SW 1-33n-92w, Muskrat field, Fremont County, Wyoming, which apparently will make the best gas well in the field. After perforating 7-inch casing at 5440-43 feet with 8 shot holes, the well showed possibilities of 100,000,000 cubic feet of gas daily. Operators are waiting on high-pressure valve for well-head before testing. Rock pressure of the



NO MORE WIRE LINE WEAR

Patterson-Ballagh's improved wire line guide permits uniform spooling of the line, eliminating whipping and increasing the line's life. It may be easily installed in the derrick and consists of a tough rubber retaining sleeve through which the wire line runs. This sleeve is housed in a strong metal body and is held in taut position by side lines. No matter how fast the wire line travels or in what position the guide is set, no sparks can occur. Each metal housing contains four 8" liner sections replaceable singly or as a unit. Weight is approximately 100 pounds.

PATTERSON-BALLAGH CORPORATION

Plant and General Offices: 1900 East 65th St., Los Angeles, Calif., U. S. A.
New York Office: 39 Cortlandt St., New York City
Oklahoma Office: Oklahoma City, 1704 N. W. 17th St.
Texas Office: Houston, 515 M & M Building
Louisiana Office: Box 23, Oil City, La.

PATTERSON-BALLAGH
WIRE LINE GUIDE

PETROLEUM DICTIONARY

By

HOLLIS P. PORTER

Member of

American Society of Mechanical Engineers
American Petroleum Institute.

This work grew out of a demand for some source of definition for the terms used by the petroleum industry. It contains over 3,000 definitions of words used constantly by all phases of the petroleum industry. It was published in 1936, and has found its way into engineering departments, legal departments and land departments of producing concerns, as well as to the desks of executives of the petroleum industry.

Manufacturers also find it valuable for reference. Advertising agencies find it a valuable addition to the library.

253 Pages, 6x9, cloth bound, Price Postpaid, $3.00

Send order to

THE GULF PUBLISHING COMPANY
P. O. BOX 2811 **HOUSTON, TEXAS**

well rose to 2200 pounds per square inch when shut in 40 minutes. The well is plugged back after drilling to 8110 feet where the Madison lime formation was encountered.

Introducing the gun-perforator method of completion in Salt Creek field, Natrona County, central Wyoming, the Stanolind Oil & Gas Company is preparing to complete Wyoming Associated Oil Company-Tensleep 11, C NE NW 35-40n-79w, in the deep Tensleep sands of the field. Production casing has been set below the sand at 4042 feet and casing will be perforated in 10-foot sections from this point to the top of saturation at 4037 feet. Packers will be set and each 10-foot section tested separately by use of tubing run to each level.

Three new wells were started this week in Salt Creek, all headed for the deep Tensleep.

Another gas well will soon be added to the list in the Clay Basin field, Daggett County, northeastern Utah, where Mountain Fuel Supply Company is preparing to complete its Keith Smith 1, SW NE 20-3n-24e, which is waiting on cement to set around 6¾-inch casing which was set at 5603 feet. Hole bottoms at 5674 feet. New well in the field, company's R. D. Murphy 3-B, NWc NW SW 23-2n-24e, is building rig and will be spudded in the near future.

MOUNTAIN STATES Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
MONTANA		
GLACIER COUNTY (Cut Bank Field)—		
Glacier Prod. Co., Coburn 3, cse nw 4-34n-5w	12	2821
Drumheller Oil Trust Co. Fee 1, cne sw 17-34n-6w	*	3180
TOOLE COUNTY (Anaconda Dome)—		
Model Oils Ltd., Fey 1, ne sw 5-37n-3w	*	2930
KEVIN-SUNBURST FIELD—		
Wm. McKnight, Gunderson 3, ne ne nw 19-35n-2w	240	1604
Rice Oil Co., Larson 2, sw se se 18-35n-2w	225	1605
Big West Oil Co., McDonald 6 Permit 21, sw se sw 19-35n-2w	15	1516
Wm. Fulton, Thompson 2, sw ne nw 19-35n-2w	18	1699
WYOMING		
CARBON COUNTY (Rock River Field)—		
Ohio Oil, Harrison-Cooper 14, ne nw 2-20s-78w	400	3210
NIOBRARA COUNTY (Lance Creek Field)—		
Argo Oil Corporation, Ford 4, sw se 33-36n-65w	175	5392

*Failures; †Junked; ¶Million cu. ft. gas.

Drilling below 3100 feet in Washington wildcat

Wenatchee, Wash. — Norco First Drilling Corporation, of Wenatchee, reports that it is drilling a 6-inch hole at 3100 feet in its Well No. 1-A, in SW quarter of 26-22-20, on location made by the late Charles T. Lupton, consulting geologist, of Denver.

The company says the location is in the basaltic area of eastern Washington, where basalt or lava rock runs normally many hundreds to thousands of feet thick; yet this particular domal structure, located by Lupton, had only a sill of 49 feet of basalt left; over 3000 feet of drilling has been in true sedimentaries of Eocene age.

EASTERN FIELDS

Pure Oil wildcat indicates extension for Heitz field

Pittsburgh.—Indicating one of the best wells yet drilled in the Illinois Coal Basin area, Pure Oil Company cored an excellent McClosky saturation of more than 10 feet in its Anna Snyder 1, Section 3-3n-9e, Noble Township, Richland County. Location is ½ mile south of the Heitz field and 2 miles north and 1 mile east of Noble. The company will drill an offset immediately on the same lease, and another test is scheduled for the John O. Coen property. Carter Oil Company will drill on the nearby R. B. Watkins lease.

In Wayne County, Duncan Oil Company's Riggs 1, Section 27-2n-8e, Zif Township pool opener, flowed 500 barrels each of its first two days on test. Its successful completion calls for immediate protection of adjoining acreage, and Pure has already spudded in S. S. Gill 1 and is moving in material for the Anna Gill 1. Duncan Oil Company will start Riggs 2 immediately.

Calls for Driling

South of the Riggs farm, a tract of 620 acres was obtained last week by Tom Berry et al, Stillwater, Oklahoma, who will drill immediately. A second independent test being speeded by the Riggs discovery will be drilled by Louis Godlin, Gladewater, Texas, and Pete Hoffman, Cisco, Texas. Hoffman drilled the first test in the old Illinois field 35 years ago.

Shannon 1, Section 26-2n-8e, Zif Township, a mile east of Riggs 1, drilled by Meyers & Fitzpatrick, is finally being made into an oil well. When brought in with cable tools some

EASTERN FIELDS Completions

ILLINOIS

Company, Well, Location	Init. Prod. Bbls.	Depth
CLAY COUNTY—		
Pure Oil, Oscar Poppe 11	1990	2997
Fred Hubble 1	365	3014
Wiser Oil Co., Damon Smith 9	65	3051
Jack Shafer et al, Liebke 1	*	3002
CLINTON COUNTY—		
Santa Fe Oil & Gas Co., Maddox 1	40	996
W. C. McBride, Inc., Komerous 1	*	1515
FAYETTE COUNTY—		
Universal Service Drlg. Co., Fayette County Farm 1	*	2000
MARION COUNTY—		
Hausman et al, Maionnier 3	35	1466
RICHLAND COUNTY—		
Southern Illinois Pet. Co., H. Allard 1	134	2961
OHIO		
ATHENS COUNTY—		
Carpenter et al, L. L. Bean 17	2	....
D. T. Orndoff, C. M. Keirus 1	¶10	1415
BELMONT COUNTY—		
Union Gasoline & Oil Corp., Wm. Stobbs Heirs 3	2	1792
Stranges Oil Co., E. E. Brown 4	*	1621
COSHOCTON COUNTY—		
Wittmer Oil & Gas Co., E. E. Steiner 1	*	4118
GUERNSEY COUNTY—		
Geo. P. Wasmuth, L. D. Mulligan 2	¶10	1078
Cambridge Glass Co., L. R. Yarnell 1	*	1302

[*Continued on next page*]

Buy these Original Composition Valve Cups on the Basis of . . . .

DARCOVA
(Orange Label) the standard for more than thirty years under severe service at all depths.

DARVAL
(Blue Label) for service in wells to approximately 2,000 feet in depth.

DARFLEX
(Green Label) the popular favorite for wells to 800 feet in depth.

We take **pride** in a record of over 30 years in giving the oil trade absolutely dependable valve cups. We **know** it is a record you can **profit** by!

Manufactured Only by

DARLING VALVE & MFG. CO.
WILLIAMSPORT, PA.

weeks ago, it made about 80 percent water. Recementing and acidization has brought a change in the previously discouraging picture, and the well is now expected to yield about 500 barrels daily, with very little water.

In the Village of Noble, Lacy's C. A. Galloway 1 and E. E. Hipple's Webb Hana 1 are cemented. Both cored good McClosky saturations. Over 20 derricks have been erected in the village, where the first production was found less than a month ago.

Three new Richland County Townships were brought into the oil play last week. Wiser Oil Company has its Trevettel 1 in Madison Township, Valeria Oil Company has derrick up on the Anna Franklin lots, Dundas village, and Hollingsworth is building derrick for Al Wagner 1, Claremont Township.

[*Continued from page 77*]

Company, Well and Location	Init. Prod. Bbls.	Depth
HANCOCK COUNTY—		
Sun, Charles Heinger 1	*	2030
KNOX COUNTY—		
Millwood Sand Co., Raymond Lepley 3	*	621
M. F. Whitehill, M. F. Whitehill 2..	*	3145
LICKING COUNTY—		
Settles Oil Co., Phil Shannon 2....	9	767
Armbruster et al, Sarah Patton Heirs 10	5	699
MEDINA COUNTY—		
Ray Grimm, B. E. Grimm 8.....	4	452
MEIGS COUNTY—		
H. M. Nelson, Jack Globe 1.....¶.50		860
Holmes et al, Elias Jividen 4	*	2093
MONROE COUNTY—		
T. E. Drum, N. M. Leisure 2.....	3	1485
Sutton Bros., J. R. Deist 18.....	½	1482
McCalvey et al, Wm. Baness 1	*	2076
MORGAN COUNTY—		
W. S. Harris, Bower Carpenter 1....¶.10		1120
Penn Contracting Co., Marian Beach 4	¶	1614
NOBLE COUNTY—		
Mud Run Oil & Gas Co., Eleanor Bond 1	¶	....
John Yerian, Mallett Heirs 12.....	*	983
PERRY COUNTY—		
Sloan et al, Alice Cleary.....	*	885
STARK COUNTY—		
Ohio Fuel Gas, Melvin Rohr 1.....	*	4099
Roy Lindsey 1	*	4125
TUSCARAWAS COUNTY—		
East Ohio Gas, Michael Barnhart 1.¶1.20		....
Wm Ahl	¶	4590
WASHINGTON COUNTY—		
Devitt et al, Francis Fisher 20.....	*	845
WEST VIRGINIA		
BRAXTON COUNTY—		
Pittsburgh & W. Va. Gas, W. C. Hawkins 7506 .....¶.20		2365
Parkersburg Mills 7594 .....¶.07		1941
CALHOUN COUNTY—		
Jackson River Oil Co., Scotch McDonald 2	5	2190
FAYETTE COUNTY—		
Godfrey L. Cabot, Inc., Kanawha Gauley Coal Co 10 .....¶.30		2520
GILMER COUNTY—		
Pittsburgh & W. Va. aGs Co., H. H. Frymyer 7639 .....¶1.02		1651
Everett Hughes, C. L. Griffith	*	1635
JACKSON COUNTY—		
Mountain Iron & Supply Co., J. W. Kelley et al 8.....	4	1712
KANAWHA COUNTY—		
Sparton Gas Co., Susan Legg et al.¶9.77		4695
United Carbon Co., H. F. Miller et al .....¶3.43		4921
LINCOLN COUNTY—		
Blue Ridge Gas Co., W. E. Madden.¶.02		3281
PUTNAM COUNTY—		
V. C. Smith et al, W. H. Gibson 2..¶.40		2034
RITCHIE COUNTY—		
C. A. Jarvis, Canada Heirs 1.....	2	1980
Griffin Producing Co., Ed Rich 39	1	1875
J. W. Jonas, W. Va. Oil Co. 32....	½	500
Mud Lick Oil & Gas Co., S. H. Phillins .....¶.20		1945
WIRT COUNTY—		
W. C. Patterson, C. E. Vandevender 26	*	415
KENTUCKY		
DAVIESS COUNTY—		
Rex-Pyramid Oil Co., L. Taylor 1...	*	1155
A. H. Stewart et al, W. M. Holland 1	*	619
FLOYD COUNTY—		
Inland Gas Co., Ollie M. Glenn 1...¶.35		2628
HANCOCK COUNTY—		
C. D. Walker et al, Elmer Boling..	9	367
Frank Damron et al, Marion Boling 1	*	597
Jay Petroleum Co., Wm. McIntosh 3	*	657
W. E. Hupp et al, R. E. Richardson 1	*	713
LAWRENCE COUNTY—		
Kentucky Oil Producers, John Rose 1	3	774
LEE COUNTY—		
Petroleum Exploration Co., J. D. Crabtree 8	25	1159
C. E. Townsend, Andrew Combs 11..	20	936
R. J. Barbes, Alvin White 3.....	15	749
McLEAN COUNTY—		
W. H. Hupp, Hackett Bros. 29....	100	1440
Ellis & Hupp, Ruth Shockley 2.....	*	1107
OHIO COUNTY—		
E. DeHart et al, A. P. Kelly Heirs 2	10	691
Leeper Oil Co., L. C. McKinley 9..	10	762
J. C. Miller, Bowles 3	3	712
W. W. Damron, J. F. Smith 2.....	*	1185
Staves Drilling Co., M. E. Powers 4	*	722
O. Jenkins et al, W. I. Techenor 3..	*	1585
POWELL COUNTY—		
Matt Lawey, Clay Frazier et al 1....	5	....
PENNSYLVANIA		
GREENE COUNTY—		
Carnegie Natural Gas Co., J. H. Orndoff 2	25	3414
WASHINGTON COUNTY—		
Carnegie Natural Gas Co., C. M. Guthrie .....¶.54		2020

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN FIELDS

Mt. Pleasant, Mich.—Sun Oil Company's State B-1, Section 5--16n-1w, Midland County, Edenville Township, November 12 was showing 500 feet of oil at 3,849 feet, 48 feet in Dundee lime, and was shut in for tanks. The test is five miles southeast of South Beaverton oil field in Gladwin County. It is in a 3,000-acre wildcat block, mostly state leased land.

Active drilling campaign in prospect this winter

Mt. Pleasant, Mich.—Operators in Michigan are looking forward to one of the most active winter campaigns in several years, with three new fields in prospect and an 80 test wildcat program now active.

Currently, the rate of completions and new starts is definitely below the peak set in July-August-September. But with the crude marketing situation more settled, if not improved, with several new districts offering encouragement, and with the demand for additional natural gas reserves strong, operators are prepared to show little letup during the winter.

The three "hottest" new districts now being heavily played and likely to be the areas of major development campaigns include Secord and Bentley townships in Gladwin County and Nottawa township in Isabella County.

Last week Whitehill, Clovis and Drury opened Secord township, to future exploration with the Bosley 1, Section 11-19n-1e, 9 miles northeast of Buckeye production. Completion of the wildcat has been delayed, in an attempt to save a second pay zone in the Dundee, logged about three feet above the water zone at 3453 feet. Dundee was logged at 3362 feet and a pay 77 feet in which showed about four feet of saturation and filled a 5 3/16-inch hole, partly cased, with 2800 feet of oil in 36 hours. A second pay was logged at 87 feet in the Dundee, with the well making one 54-barrel flow. At 3453 water sand was encountered and operators are now trying to plug back without leading off the second pay zone. Acid will be applied after successful plug back.

New Locations at Secord

Four new locations had been staked in the Secord area up to the first of the week. Sun Oil Company has the east offset but so far has not moved in material. Whitehill et al has 1400 acres in their block and will start two tests, one an offset, at once.

Six tests ranging from an offset to one seven miles out already are drilling in the Bentley township play, in an attempt to define a productive area indicated a month ago by Harold J. Hand's Smart 1, Section 29-17n-2e, which is producing from 40 to 50 barrels daily on the pump at 3525 feet, or 111 feet in the Dundee.

So far only one test, two miles south, has been started in Nottawa township, Isabella County, following completion of Boston Oil & Gas Company's Fox 1, Section 23, 15n-5w, for 26 barrels on the pump at 3808 feet, Monroe lime. However, Gulf Refining Company (Fox 1 is a Gulf farmout) has a 16,000-acre block in this area and probably will start development sometime this month.

Much Scientific Wildcatting

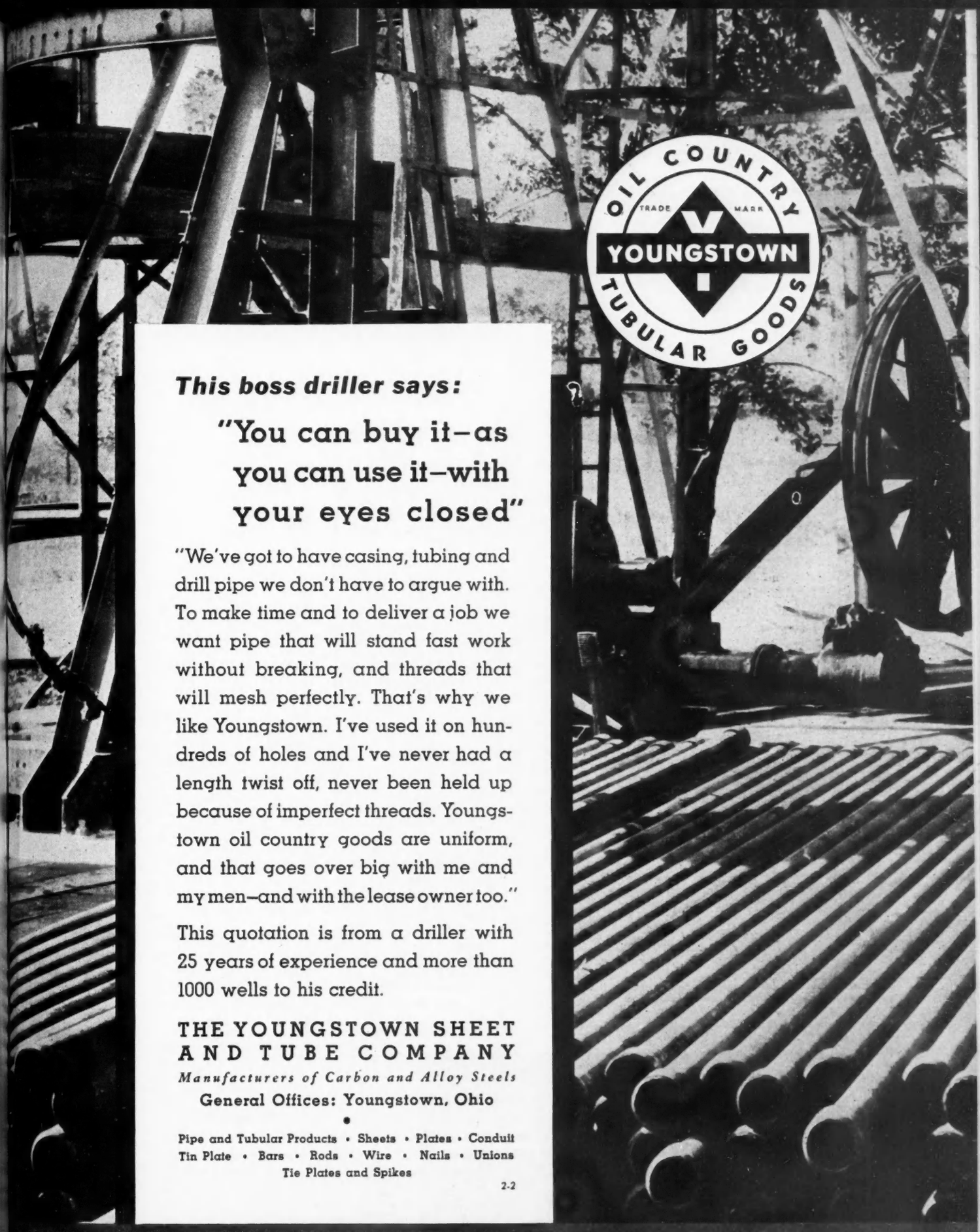
More geologically located wildcats are currently drilling and planned than at any previous time in the state, according to leading observers. This trend is expected to place outpost development in a better position to bear fruit than in the past. One noticeable present trend is the pushing of wildcatting northward, and into the southwestern part of state, in many cases outside of the bottom of the central basin, which so far has accounted for the state's major production.

There were 280 active drilling operations in the state at the beginning of last week, as compared with 210 a year ago. Of the total, 116 are in Gladwin County.

MICHIGAN Completions

Company, Well, Location	Init. Prod Bbls.	Depth
ALLEGAN COUNTY—		
Muskegon Oil Corp., Bremer 1, se nw nw 17-4n-13w	*	1762
Lentz & Miller, Guege 6, nw se ne 17-4n-13w	200	1620
ARENAC COUNTY—		
Chapman Oil Co., Lawrence 1, ne ne sw 26-19n-3e	25	2060
C. & M. Securities Co., Hanggi 1, ne se se 26-19n-3e	40	2042
GLADWIN COUNTY—		
Vorhees Drlg. Co., Dorma 1, se nw ne 4-18n-1w	*	1312
Pence & King, Stahl 1, sw se sw 24-18n-1w	50	3599
Major & Howard, Dykhuis 1, ne nw nw 34-18n-1w	*	1250
GRATIOT COUNTY—		
Sam Siegel, Kerr 1, n½ nw ne 36-10n-1w	*	3181
ISABELLA COUNTY—		
Pure Oil Co., Skarrit 2, ne ne ne 5-14n-6w	250	3624
McClintic B5, nw se sw 33-15n-6w	450	3627
Chartiers Oil Co., Currie 5, ne sw sw 5-16n-4w	*	4002
MONTCALM COUNTY—		
C. H. Seger, Switzer 1, se ne nw 10-11n-5w	*	3395

*Failures; †Junked; ¶Million cu. ft. gas.



This boss driller says:

"You can buy it—as you can use it—with your eyes closed"

"We've got to have casing, tubing and drill pipe we don't have to argue with. To make time and to deliver a job we want pipe that will stand fast work without breaking, and threads that will mesh perfectly. That's why we like Youngstown. I've used it on hundreds of holes and I've never had a length twist off, never been held up because of imperfect threads. Youngstown oil country goods are uniform, and that goes over big with me and my men—and with the lease owner too."

This quotation is from a driller with 25 years of experience and more than 1000 wells to his credit.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices: Youngstown, Ohio

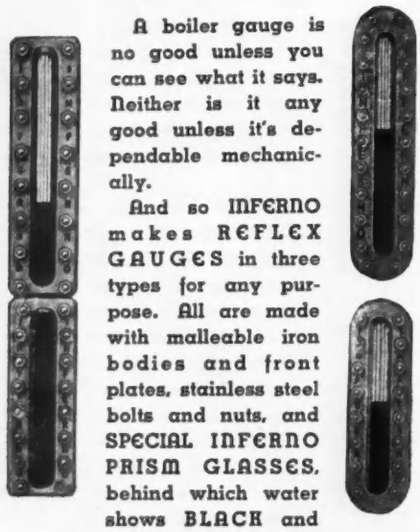
•

Pipe and Tubular Products • Sheets • Plates • Conduit Tin Plate • Bars • Rods • Wire • Nails • Unions Tie Plates and Spikes

2-2

YOUNGSTOWN

Dependable
WATER GAUGES
by
INFERNO



A boiler gauge is no good unless you can see what it says. Neither is it any good unless it's dependable mechanically.

And so INFERNO makes REFLEX GAUGES in three types for any purpose. All are made with malleable iron bodies and front plates, stainless steel bolts and nuts, and SPECIAL INFERNO PRISM GLASSES, behind which water shows BLACK and empty space shows WHITE. No guessing. No mistakes. Recommended for working pressures to 1000 lbs., and temperatures to 1000 degrees F. Ask for Bulletin No. 7.

THE INFERNO CO.

"Makers of Better Steam Equipment"
P. O. Box 1138 Shreveport, La.

INFERNO

Have You Taken The Peace Pledge?

WRITE FOR INFORMATION.

CALIFORNIA FIELDS

New San Joaquin Valley field deepest in California.

* * *

Test seeks to open new field or extend Montebello.

Los Angeles.—A new oil field and a new producing horizon for San Joaquin Valley have been proved by Union Oil Company, through completion of the deepest producing well in California and the second deepest producer in the world. This was Union's Kernco 1-34, completed at 11,302 feet, and located 330 feet south and 330 feet west from east quarter corner of Section 34-28-25. The new field probably will be designated as Rio Bravo.

The initial production was 2400 barrels of 39.6 gravity clean oil and 1,260,000 cubic feet of gas. Pressures were 1950 pounds on the tubing and 2000 pounds on the casing. Due to lack of storage, the well was choked back to 1055 barrels, pending pipe line connections, which will be completed soon.

The new field opened up by this well, although deeper, is regarded as a continuation of the trend of the Greeley and Ten Section fields, on a line with it to the southeast. By its extension of the San Joaquin Valley producing area, it opens up to the California oil industry what is potentially the largest series of oil fields in the United States, with the possible exception of the East Texas region.

The new well is yielding the only productio nfrom below 11,000 feet in California. Only one other well in the world has proved productive below 11,000 feet, the Humble Oil & Refining Company's Elender 1 in the Lirette field, Louisiana Gulf Coast.

An attempt to open a new field on a northwest extension of the old Montebello field is slated, as Monte Cristo Petroleum Company has staked a location 700 feet north and 400 feet west from southeast corner of Section 27-1s-12w.

In the Arvin area of Kern County, General Petroleum Corporation's Arvin 1, Section 27-31-29, on drill stem test yielded a small amount of 30 gravity oil and considerable salt water from 7447-7485 feet, and is coring ahead below 7540 feet. Previously, from 7290-7358 feet, the well flowed 104 barrels in 16 hours, 30 gravity clean oil.

About 15 miles from Bakersfield, Kern County, and four miles northwest of the new Ten Section field, Ohio Oil Company apparently has proved a new field, although the wildcat test is coring ahead in oil sand. This is Kern County Land Company E-3, which showed good for 2000 barrels of 34.6 gravity oil and 15,000,000 cubic feet on drill stem test at 8065-8129 feet.

CALIFORNIA Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
EAST COYOTE—		
Standard, Coyote 2	800	4125
EL SEGUNDO—		
Ohio Oil Co., A. S. Gough 8	250	7516
Richeld Oil Corp., Howard 1	420	7494
WILMINGTON—		
Bankline Oil Co., D.H.C. 23	325	3330
Buckeye-Union Oil Co., No. W-1	250	3600
YORBA LINDA—		
Beverly Hills Pet. Co., Fricke 1	150	1910
Hjorth & Mohr, No. 1	100	1400
Mid-State Pet. Co., Oliver 1	125	1740
KETTLEMAN HILLS—		
Kettleman North Dome, No. 4P-41	2525	8065
LOST HILLS—		
Texas Co., Theta 2-27	65	1134
McKITTRICK—		
Goforth & Bradfield, No. 7	25	862
MIDWAY-SUNSET—		
Hallmark Oil Co., No. 8	300	2800
Otis Hoyt, Maricopa 7	265	1884
Texas Co., Midway 26	265	3249
General Pet. Corp., Hill Midway 103	*	3930
MOUNT POSO—		
Ring Oil Co., Bohen 3	375	1670
Vanguard Oil Co., Baker 8	300	1740
MOUNTAIN VIEW—		
Hogan Pet. Corp., Symons 4	1000	5515
Petrol Corp., DiGiorgio 1	130	5816
ROUND MOUNTAIN—		
Tamnico Pet. Co., B and G K-4	400	1866
RIO BRAVO—		
Union Oil Co., Kernco 1-34	2400	11302
GREELEY—		
Standard, K.C.L. 11-8	*	7425
KERN FRONT—		
Oils Inc., Seven Spot 40-1	*	1287
KERN COUNTY—		
Vedder Pet. Corp., Lambert 1	*	2386
STANISLAUS COUNTY—		
Texas Co., Bacon 1	*	1133
YOLO COUNTY—		
Standard, Peter Cook 1	*	5009
SANTA BARBARA COUNTY—		
Tide Water Associated, Leonis 1	*	4949

*Failures; †Junked; ¶Million cu. ft. gas.

H-K
CLINOGRAPH
also
SURWEL & SYFO Surveying Instruments
SPERRY-SUN WELL SURVEYING CO.
PHILADELPHIA - TULSA - HOUSTON - LONG BEACH - LAFAYETTE, LA. - BAKERSFIELD, CALIF.

IMPORTANT WILDCAT TESTS

ALABAMA

CHOCTAW COUNTY—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, elev 120 ft, top Selma chalk 1865 ft, top Eutaw 2913 ft, top Tuscaloosa 3525 ft, top Paleozoics 6650 ft, dr 7020 ft, Ordivician.

ARKANSAS

CALHOUN COUNTY—Hayner et al's Brandon 1, sw nw sw 34-11-13, dr 2890 ft, shale, sand.

CLARK COUNTY—M. M. Martin's C. L. Cabe 1, nw nw 14-10-20, ow dd 1810 ft.

COLUMBIA COUNTY—Kerrlyn Oil Co.'s Barnett 1, sw ne 14-17-20, dr 5286 ft, shale. Tide Water Associated & Seaboard's C. N. Crumpler 1, nec sw 24-17-19, elev 282 ft, top lower Travis Peak 5420 ft. dr 6996 ft, red shale and sand. E. O. Olds' Mary Dennis 1, nw se sw 4-17-21, dr 3925 ft.

DREW COUNTY—Sloan Wells et al's Hardy 1, sec nw 3-14-7, rur.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne .-12-26, sdtr td 2944 ft.

LONOKE COUNTY—J. E. Russell's Gunter 1, se se 17-5-10, spd dr 125 ft. Frank Silver's Chambers Est. 2, sw ne sw 17-2-7, wo 1500 ft.

MILLER COUNTY—Freeman W. Bu·ford's August 1, 8-20-27, swabbing pb depth 6165 ft, old td 6230 ft. Odell Hinson's Montana Realty Co. 1, nw nw 3-17-28, pb to 5272 ft, air perf and test.

OUACHITA COUNTY — Copenhaver Oil Corp.'s J. E. Evans 1, ne sw 20-11-19, co 1730 ft. C. F. Whittaker's C. C. Guttry 1, se sw se sw 21-15-19, bro sand 2164-80 ft. cemtd 7 in csg 2136 ft, 100 ft oih, wosr td 2180 ft.

SEVIER COUNTY—C. & M. Oil Co.'s Arnold 1, sw nw ne 23-9-30, dry abn td 996 ft (corrected depth).

UNION COUNTY—Alice Sidney Oil Co.'s Morgan 2, 18-18-17, dr 7554 ft sand. F. M. Jones' Marine Oil Co. 2, 17-18-17, dr 7185 ft; Marine Oil Co. 3, 17-18-17, dr 2786 ft; Marine Oil Co. 4, 17-18-17, dr 4530 ft. Lion O. R. Co.'s Morgan B-4, nw nw se 18-18-17, spd woc surf csg; Morgan C-1, se se 18-18-17, rur. M. Justiss 1, nw ne 19-18-17, owdd td 6012 ft; Marine 1, 17-18-17, dr 3420 ft; Morgan B-3, 18-18-17, rur. Marine Oil Co.'s M. Justiss 2, 18-18-17, dr 5282 ft. Phillips Pet. Co.'s Ed Gan 1, 18-18-17, coring 7533 ft, shale. Jennings 1, 18-18-17, 16 in csg 169 ft, dr 1900 ft; First National Bank 1, ne sw 17-18-17, rur.

CALIFORNIA

JACALITOS CREEK—Dauphin Dev. Co.'s Boone 1, 20-21-14, dr gray sand 1610 ft.

PANOCHE—J. A. Gauthier's Hubbard 1, 12-14-11, dr sandy shale 501 ft.

JACALITOS HILLS—Jacalitos Pet. Co.'s Associated 1, 14-21-15, dr shale 3950 ft.

HURON—Pure Oil Co.'s S.P. 1, 31-18-17, dr shale 7775 ft.

KERN COUNTY

DEVIL'S DEN—Amerada Pet. Corp.'s Beer 5, 22-26-19, dr gray sand 2895 ft.

LERDO AREA—Arkelo Pet. Co.'s Arkelo 41, 23-28-26, td 10,056 ft, plug 7780 ft, sd.

WASCO—Continental Oil Co.'s K.C.L. A-2, 8-27-24, td 11,584 ft, cutting and pulling stuck dr pipe.

ROSEDALE—Continental Oil Co.'s K.C.L. B-1, 12-29-26, td 10,205 ft, fsh dr pipe.

ROUND MOUNTAIN—Crestmont Oil Co.'s Staley 1, 8-28-29, rur. Freemont Oil Co.'s Olcese 2, 35-28-29, dr shale 1510 ft. J. J. Tavis' Olcese-Tavis 1, 4-29-29, td 3260 ft, co. D. G. Vedder's Bell 1, 12-28-28, dr shale 1570 ft.

ARVIN—General Pet. Corp.'s Houchin 1, 27-31-29, td 7530 ft, oil sand 7447 to 7461 ft, ran formation tester, recovered oil and salt water.

GRAPEVINE—Honolulu Oil Corp.'s Honolulu-Associated 33-1, 33-12-19, rig, formerly Tide Water Associated-Ohio Oil Co.'s T.R.C. D-2, 23-11-19, rur. Universal Cons. Oil Co.'s Tejon 1, 33-11-19, dr sandy shale 490 ft.

STRAND—Ohio Oil Co.'s K.C.L. E-3, 14-30-25, td 8129 ft, oil sand at 8095 ft, ran formation tester, showed for 2000 bbls 36 gravity oil and 15,000,000 cu ft gas to core ahead.

KERN FRONT—Pacific Oil & Gas Dev. Co.'s Davidson 2, 36-27-27, rig. McKittrick-Par-Mer Oil Co.'s Par-Mer 1, 6-31-22, dr shale 1350 ft. Rocima Oil Co.'s No. 1, 20-30-22, rig.

MOUNTAIN VIEW—Section Six Oil Co.'s Johnston 1, 6-31-29, dr shale 6150 ft.

TEN SECTION AREA—Standard's K.C.L. 15-1, 27-30-26, dr shale and sand 5660 ft.

SEMI TROPIC—Standard's Randolph Com. 2, 14-27-23, dr shale 6395 ft.

McGUNDEN—Standard's Routzong 1, 2-30-28, dr shale 4298 ft.

GREELEY AREA—Superior Oil Co.'s K.C.L. 9, 3-30-26, td 7870 ft, swabbing muddy water and oil.

SOUTH MARICOPA—Texas Co.'s Pioneer 1, 33-11-23, dr gray sand 4575 ft.

RIO BRAVO—Union Oil Co.'s Kernco 1-34, 34-28-25, td 11,302 ft, 6⅝ in at 10,245 ft, good for 2400 bbls clean oil, plug, gas, good pressures, see completions.

MOUNT POSO—Vedder Pet. Corp.'s Lambert 1, 25-26-27, td 2386 ft, abn in gray sand, top Vedder at 2341 ft.

MISCELLANEOUS

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7708 ft, plug 5737 ft shut in pressure 2225 lbs.

MERCED COUNTY—Amerada Pet. Corp.'s Carano 1, 19-10-11, dr sand an shale 4463 ft.

SAN JOAQUIN COUNTY—Standard's Weil-Zuckerman 2, 25-2-4, td 5265 ft, wocs 9⅝ in at 5206 ft.

SAN MATEO COUNTY—Wilshire Oil Co.'s Cowell 1, 20-6-5, dr shale 3190 ft.

SUTTER COUNTY—Buttes Oilfields' No. 3, 2-15-1 (Marysville Buttes), td 6051 ft, fsh dr pipe.

YOLO COUNTY—Standard's Peter Cook 32-12-1, td 5009 ft in shale, abn; E. E. Hooper 1, 32-9-1, td 5181 ft, 6¾ in at 3670 ft, tested good for 4,000,000 cu ft gas, and some salt water.

SAN LUIS OBISPO COUNTY—Cholame Syn.'s Jack 2, 10-25-15, td 3641 ft, in schist, to run tubing and test. A. O. Lewis' Pecho 1, 34-30-10, sd 2750 ft. Little Cuyama Oil Co.'s No. 1, 3-10-26, dr shale 1850 ft.

SANTA BARBARA COUNTY—E. E. Arnold's Arnold-Apache 2, 8-8-33, td 6370 ft, pumping 40 bbls, cut 60 percent. Carpinteria Oil Co.'s No. 1, 34-4-2, rig. Crude Oil Dr. Co.'s Crude 1, 19-9-34, sd 515 ft, to drop from report O. C. Fields' Santa Rita 1, 11-7-33, sd 3358 ft. C B. Gauthier's No. 17-1A, 22-4-26, lcn. Gaviota Oil Co.'s Hollister 1, 35-5-33, td 3207 ft, shut in Nine Springs Oil Co.'s Brinkinhoff 1, 9-7-30, sd 3300 ft, to drop from report. Standard's Los Flores Land 1, 27-9-33, bldg rig. Tide Water Associated's Leonis 1, 3-6-33 (Santa Rita), td 4949 ft, junked to 1735 ft, abn.

VENTURA COUNTY—Oxnard Oil Co.'s Vanomi 1, 10-1-22, td 6302 ft, plug 6100 ft, fluid rose to surface, muddy water, trace heavy oil. Seven Seas Oil Co.'s Johnson 1, 15-1-22, sd 1038 ft, to drop from report. So. Calif. Dr. Co.'s W.P.D. 2, 26-2-21, dr sand and shale 1075 ft. Vaca Oil Expl. Co.'s Livingston 1, 6-1-21, td 4270 ft, pumping 15 bbls, 11 gravity oil cut 40 percent. Richfield Oil Corp.'s McFarland 1, 13-2-21, dr shale 4879 ft. Texas Co.'s Edwards 1 (Camarilla Area), rur.

SOUTHERN CALIFORNIA

WILMINGTON AREA—Alford Dev. Co.'s Classif. Yards 3, 22-4-13, dr sand and shale 2560 ft.

NEWHALL — Barnsdall's Rancho S.F. 2, 26-4-17, td 5090 ft, redr at 3638 ft. West Coast Dev. Corp.'s Newhall Land 1, 27-4-16, grading location.

MONTEBELLO AREA — British American Oil Prod. Co.'s Pico 1, 12-2-12, dr hard sand 3696 ft.

PICO CANYON—Downey Oil Corp.'s No. 1, 36-4-17, dr hard sand 2413 ft.

PALOS VERDES—Hunter-Devlin & Associates' No. 1, 17-4-14, td 5502 ft, plugging back to test upper showings, conglomerate barren topped at 5492 ft, top schist at 5501 ft.

PALOS VERDES HILLS—McClaren Bros.' No. 1, 27-4-14, td 3970 ft, redr to 1870 ft, sd; No. 2, rigged and idle.

MONTEREY PARK — Monte Cristo Pet. Co.'s Garvey 1, 27-1-12, rur.

CASTIAC — Royal Lands Corp.'s Ramona Hills 1, 8-4-17, spud and dr.

ORANGE COUNTY—Shell Oil Co.'s Harbeson 1, 9-4-10, dr sandy shale 7348 ft.

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, arr pck & retest at 2600 ft, old td 6126 ft.

LEVY COUNTY—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, dr 1500 ft, grey lime.

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-4n-24e, elev 110 ft, dr 3702 ft, shale & lime shells.

SUWANEE COUNTY—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, resetting 16 in csg at 190 ft to eliminate caving hole.

KANSAS

BARBER COUNTY—Olson & Skelly Oil Co.'s Elsea 1, sw se nw 27-32s-14w, td 5174 ft, 3800 ft wih, co.

BARTON COUNTY—C. L. Price et al's Hammeke 1, ne ne sw 12-18s-12w, 1800 ft oih. Brouk & Nat'l. Ref. Co.'s Gory 1, nw nw sw 10-17s-13w, td 3352 ft, pot 255 bbls oil, comp. Shell Pet. Corp.'s Peterman 1, se ne se 13-16s-14w, td 3366 ft, pot 1654 bbls oil, comp. Arch Merriam et al's Norris 1, ne ne nw 33-17s-11w, dr 1945 ft. Martin & Foraker et al's Dick 1, ne sw sw 31-19s-11w, mim. Tom Palmer et al's Polzin 1, nw nw se 4-16s-12w, 5 in liner & perf 3317-26 ft. Shell Pet Corp.'s Ehrlich 1, sw sw sw 1-16s-14w, dr 3100 ft. Stanolind O&G Co.'s Hagen "A" 1, se se se 21-20s-11w, dr 3045 ft.

CHASE COUNTY—Cal-Ill-Kans Oil Co.'s Evans 1, sw sw nw 11-22s-9e, dr 2100 ft.

CHAUTAUQUA COUNTY—C. L. Price et al's Garrett 1, nw sw nw 26-32s-11e, co 1545 ft. Harrison et al's Brown 1, ne se ne 19-34s-10e, sd 820 ft. W. G. Buffington's Fisher 1, cwl sw nw 10-34s-9e, sd 1677 ft; so.

CLARK COUNTY—Olson Oil et al's Watkins 1, sw sw nw 23-32s-21w, dr 3690 ft.

COWLEY COUNTY—Pryor & Lockhart's Brown 1, ne se se 34-33s-3e, pb 3403 ft; 7 in csg 3361 ft; shot w/30 qts 3367-3402 ft. G. M. Smith & C. L. Price's Henderson 1, sw sw sw 25-32s-6e, dr 2100 ft. Earl Wakefield's Whitson 1, sw ne se 8-32s-4e, rig. Arthur Brewer Co.'s Shepherd 1, ne ne sw 20-32s-4e, dr 1600 ft.

ELLIS COUNTY—Lario O&G Co.'s Ball 1, nw nw ne 8-12s-18w, td 3876 ft, sulph wtr, sdo. P. G. Reynolds et al's Karlin 1, nw nw nw 13-12s-18w, ur 8 in csg 3135 ft. Skiles et al's Jensen 1, sw se ne 26-12s-18w, sd 2910 ft. Colonial Oil Co. & Bernheimer's Allbert 1, sw sw ne 13-12s-18w, dr 2775 ft. Brunson Drlg. & Glimac Oil Co.'s Weisner 1, se sw se 31-13s-17w, p 12½ bbls fluid, 7 hrs, 25 percent wtr. Aylward Prod. Co. et al's Berens 1, se se se 10-14s-16w, td 3493 ft, hfw, d & a. Glimac Oil Co. et al's K.C. Life Ins. Co. 1, se sw nw 5-11s-18w, mim. Colonial Oil Co.'s Hadley 1, se ne se 5-11s-18w, lcn. Bradley Oil Co.'s Jensen 1, nw nw se 36-11s-19w, rot rig.

ELLSWORTH COUNTY — Colonial Oil Co.'s Hogy 1, nw nw sw 16-16s-10w, ru & sd. Hinkle et al's Alden 1, se se sw 17-17s-10w, td 3331 ft, d & a. Hinkle et al's Andrea 1, ne ne se 17-17s-10w, ru & sd.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*	owdd—*old well drilling deeper.*
‡—*salt water (completions).*	owpb—*old well plugging back.*
†—*junked and abandoned.*	pb—*plugged back or plugging back.*
¶—*million feet of gas.*	r—*reaming.*
abd—*abandoned.*	rog—*rig on the ground.*
bbls—*barrels.*	rur—*rigging up rotary tools.*
br—*building rig.*	rust—*rigging up standard tools.*
b.s.—*basic sediment.*	sd—*shut down.*
csg—*casing.*	sdtr—*sidetracking.*
co—*cleaning out.*	sg—*show gas.*
dd—*drilling deeper.*	si—*shut in.*
dk—*derrick.*	so—*show oil.*
dr—*drilling.*	so&g—*show oil and gas.*
fsg—*fishing.*	spd—*spudding.*
ft—*feet.*	sr—*straight reaming.*
hfw—*hole full of water.*	sw—*salt water.*
in—*inches.*	td—*total depth.*
lcn—*location.*	ur—*underreaming.*
m—*milling.*	wih—*water in the hole.*
mim—*moving in materials.*	wo—*workover.*
mit—*moving in tools.*	wocs—*waiting on cement to set.*
mot—*milling on tools.*	wosr—*waiting on standard rig.*
n. s. e. w—*north, south, east, west.*	
oih—*oil in hole.*	

FORD COUNTY—Olson Oil Co. et al's Fowler 1, csw¼ 26-27s-22w, cor 4702-12 ft, rec 8 ft shale & lime, dry.

GRANT COUNTY—R. K. Wilson's Helmly 1-22, cse¼ 22-28s-37w, dr 2412 ft, 500,000 cf gas.

GRAY COUNTY—P. G. Reynolds' Watkins 1, csw 32-28s-28w, rig.

HARVEY COUNTY—Allison & Fitzwilliams et al's Hawks 1, se sw ne 16-24s-1w, dr 1970 ft.

LOGAN COUNTY—Morgan, Flynn, Cobb et al's McMillan 1, cnw 9-13s-37w, td 5465 ft, d & a.

McPHERSON COUNTY—C. E. Ash Drlg. Co.'s Broman 1, ne ne nw 19-17s-4w, ur 6 in csg 3408 ft. Dolepark Dev. Co.'s Doles 1, ne nw ne 12-19s-1w, set 8 in csg 2775 ft, sd. Clyde Pulse et al's Boesker 1, se se nw 29-20s-1w, rig. Boyle & Grossman's Diener 1, se se ne 35-19s-1w, fsg 2320 ft.

NESS COUNTY—Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, co 3265 ft.

OSBORNE COUNTY—Fred Chaddox & Atlantic's Slater 1, ne sw ne 33-10s-15w, td 3835 ft, d & a.

PAWNEE COUNTY—Stanolind & Amerada's Jentz 1, sw sw sw 25-20s-16w, dr 3191 ft. Phillips Pet. Co.'s F. A. Johnson 1, cne sw 8-20s-19w, bldg rot rig.

PRATT COUNTY—Skelly Oil Co. et al's Adams 1, se nw ne 2-28s-11w, fsg 4300 ft. Colonial Oil Co. et al's Hays 1, se se sw 4-26s-12w, dr 3840 ft. Penn Drlg. Co. et al's Holland 1, sw nw se 6-26s-12w, dr 2130 ft.

RENO COUNTY—Sam Schneider et al's Kroecker 1, ne ne ne 12-22s-5w, dr 3160 ft. Street & Butler Kincaid 1, ne ne nw 13-24s-4w, ru & sd. Carey et al's McPheeters 1, ne ne nw 22-26s-8w, spd & sd. W. E. Witt et al's Fair 1, nw se se 4-22s-8w, sd 2890 ft. Cohen et al's Teter 1, se se sw 3-23s-5w, ru & sd. Westgate-Greenland Oil Co. et al's Popp 1, sw sw ne 7-25s-4w, dr 3013 ft.

RICE COUNTY—Gillespie et al's Strong 1, ne ne nw 9-18s-8w, spd & sd. John Hanna et al's Marshall 1, ne nw nw 30-18s-8w, sd 1530 ft. Skiles et al's Campbell 1, se se ne 28-19s-9w, td 2957 ft, to dd to sil lime. Gerbrand-Pulse Oil & Drlg. Co.'s Wellman 1, sw sw sw 22-21s-9w, td 3327 ft, est 22,481,000 cf dry gas, comp. Bell O&G Co.'s Timbers 1, nw nw ne 8-21s-8w, td 3522 ft, d & a.

ROOKS COUNTY—Producers Oil Co. et al's Ham 1, sw sw nw 25-7s-19w, spd 60 ft. Graham et al's Fike 1, sw sw sw 9-9s-17w, fsg. C. R. Craft et al's Ziegler 1, ne ne sw 8-10s-16w, ur 6 in csg 3304 ft. Superior Oil et al's Casey 1, se se se 35-10s-19w, cor 3652 ft. The Texas Co.'s McCarroll 1, cwl nw 29-10s-17w, dr 3295 ft.

RUSH COUNTY—Wakefield et al's Zimmerman 1, se se sw 7-16s-18w, td 3664 ft, d & a. Wakefield & Brouk's Kerbs 1, nw nw se 11-17s-16w, dr 900 ft.

RUSSELL COUNTY—Park's Opdycke 1, sw sw sw 20-14s-13w, td 3180 ft, 2700 ft oil. Emrichs et al's Anderson 1, ne se sw 33-15s-11w, spd & sd. Cities Service et al's Eichman 1, csw sw se 12-15s-14w, td 3123 ft, pot 866 bbls oil, comp. Phil-Han Oil Co.'s Deines 1, ne ne nw 33-14s-14w, td 3205 ft, d & a. Murfin & Vernon O&G Co.'s Pearson 1, ne ne ne 3-15s-15w, dr 845 ft. C. L. Price's Sebesta 1, ne ne ne 36-15s-11w, set 7 in csg 2950 ft.

SEDGWICK COUNTY—Nat'l. Ref. Co.'s Fee 1, se ne se 36-27s-2e, td 2875 ft, run 6 in csg. I. W. Murfin et al's Martin 1, se se nw 18-28s-1e, testing. W. C. Talbott et al's Downs Estate 1, se se nw 32-28s-2e, testing. Union O&R et al's Howell 1, sw sw sw 6-29s-1e, dr 2100 ft. Frank Hudson et al's Fulton 1, ne ne se 35-28s-1e, fsg 1550 ft. McKnab et al's Garrett 1, se sw sw 18-29s-2e, sd 100 ft. Continental Oil Co. et al's Oehlert 1, nw nw se 7-27s-4w, dr 2250 ft. Steinbuchel's Shaffer 1, sw sw nw 18-25s-1e, dr 2112 ft.

STAFFORD COUNTY—W. P. Faulkner's Moses 1, nw nw sw 9-22s-13w, sd 2170 ft. Fred Rust et al's Drach 1, ne ne sw 12-22s-13w, td 3705 ft, fil 3100 ft with oil overnight. Kessler O&FG et al's Pinkston 1, ne nw nw 17-22s-14w, cor 3924-39 ft, td, sulph wtr, d & a. Stanolind O&G Co.'s Tiechman 1, se se se 13-22s-13w, td 3756 ft, good porosity & sho black oil. Stanolind O&G Co.'s Shank 1, se se se 17-24s-13w, td 4130 ft, ss 4128-30 ft. Torry & Feaster et al's McConnaughay 1, ne se nw 8-24s-13w, dr 2052 ft.

STEVENS COUNTY — United Producing Co.'s Beardsley 1, cn½ 12-31s-35w, set 7 in csg 2525 ft, woc.

SUMNER COUNTY — W. M. McKnab's Blair 1, sw sw sw 7-30s-1e, td 3869 ft, testing. R. J. Wixon's Newton 1, se se se 31-30s-2e, dr 2530 ft. Magnolia Pet. Co.'s Baird 1, sw se se 2-30s-4w, pull tbng to dr cem & test.

TREGO COUNTY — Phillips Pet. Co.'s Trego 1, cne nw 14-12s-23w, fsg 4257 ft. Thurman Hill et al's Lawson 1, sw sw nw 7-14s-22w, dr 2640 ft. R. E. McNely et al's Hille 1, cse ne 22-15s-24w, cor 4310 ft.

WALLACE COUNTY—H. F. Wilcox O&G Co.'s Parker 1, se se ne 9-11s-40w, dr 5100 ft.

NORTH LOUISIANA

BIENVILLE PARISH—DeSoto O&G Co.'s Wm. Ashley 2, c sw se 15-16n-10w, rur. Gulf Oil Corp.'s Goodpine Oil Co. 1, se sw 25-14n-8w, top massive anhydrite 5303 ft, dr 5510 ft. Hunt & Seaboard's Federal Land Bank 1, c s½ 10-16n-6w, 9⅝ in csg 2078 ft, 7 in csg cemtd 6857 ft, woc & d 6928 ft.

CADDO PARISH—A. O. Olsen's R. T. Sharp 1, nw nw 15-18n-16w, coring 4810 ft. Prairie River Synd.'s Hutchinson 1, sw nw 15-15n-12w, elev 153 ft, top lower Marine 8380 ft, top Bodcaw sand 8775 ft, tested sg 8987-9110 ft, arr deepen td 9141 ft. W. J. Hunter's N. B. Stoer 2, sw sw 10-15n-15w, rur. A. D. Robinson et al's Dickson 1, 22-20n-14w, dr 800 ft.

CLAIBORNE PARISH—I. B. Bond's Burgess 1, ne se ne 3-20n-5w, elev 276 ft, wosr pb depth 5325 ft, old td 5800 ft. W. L. McClanahan's J. T. Lewis 1, sw se 25-20n-7w, 16 in csg 166 ft, dr 2780 ft. Union Power Co.'s (formerly United) et al's Brownfield 2, 6-19n-5w, dr 7240 ft. Hawks 1, 5-19n-5w, cemt 5½ in csg 5568 ft, est 15 mil ft gas, td 5751 ft.

DE SOTO PARISH—Clear Lake Oil Co.'s J. A. Woolums 1, nw nw 29-12n-12w, cored sand so 2674 ft, wo 6578 csg td 2694 ft. Wright Harris et al's (Kingston Oil Co.) C. B Scott 1, ne ne 32-14n-13w, testing so 2765 ft.

LINCOLN PARISH—E. H. Moore, Inc's Commercial Bank 1, nw nw 22-18n-5w, top Blossom 3173 ft, elev 372 ft, coring 6025 ft.

UNION PARISH—Joe Modisett's Frost Lbr. Co. 1, ne sw 14-21n-1e, dr plug in 9⅝ in csg cemtd at 4358 ft (7000 ft test).

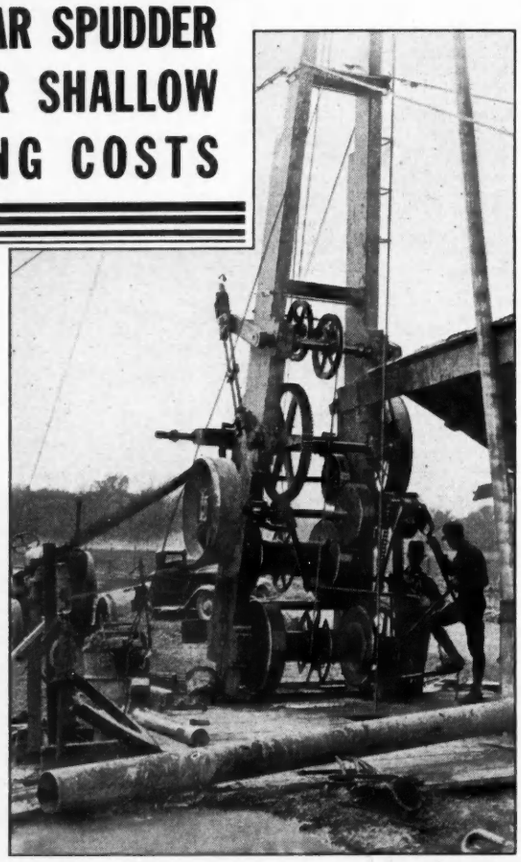
SOUTH LOUISIANA

ACADIA PARISH—J. E. Daniel's Setting 1, Trilby prospect, 17-9s-1w, dr shale 3014 ft. Gulf's Broussard 1, Midland area, 49-10s-2w, dr shale 7609 ft. Humble's Sarver 1, South Crowley area, 35-10s-1e, dr shale 9603 ft. Magnolia's Duson 1, Iota prospect, 14-8s-2w, dr shale 7999 ft. J. G. Markley et al's Daigle Farms 1, Churchpoint area, 19-7s-2e, dr shale 7590 ft.

CALCASIEU PARISH—D & D Oil Co.'s Lutcher Moore 2, nw of Starks, 1-8s-13w, dr shale 8709 ft. Federal Pet. Co.'s Sabine Tram 1, w of Starks, 25-8s-14w, dr shale 7319 ft. Union Sulphur's Bell 1, s of Sulphur, 10-10s-10w, dr shale 7965 ft. Wheeler Oil Corp.'s School Land 2, e of Gillis, 16-9s-7w, dk.

CAMERON PARISH — Humble's Miami Corp. 1, Catfish Lake area, 8-14s-5w, dr sand no show, 8145 ft. Superior's State 1, in Gulf of Mexico, 4-15s-8w, dr 5908 ft.

A MODEL "K" STAR SPUDDER WILL CUT YOUR SHALLOW WELL DRILLING COSTS



A large Oklahoma operator using Model K Stars drilled over 27,000 feet of hole at a cost of less than 51 cents per foot. This figure covers the complete cost including depreciation, insurance and supervision.

★

A Kansas operator, using a Model K Star, drilled a 1,618 foot hole carrying a 12½" hole to 500 feet—10" hole to 900 feet—8¼" hole to 1,162 feet and finished with 6¼" hole at 1,618 feet.

★

An Illinois operator handled 1,000 feet of 10" casing on the mast of his Model K Star without shear poles.

★

The above records are typical of the performance that owners are securing from their Model K Stars.

A COMPLETE DRILLING UNIT. The Model K is a complete drilling unit that has consistently out-performed other machines of a similar capacity both in drilling and moving. Because of its design and light weight, it is moved and rigged up faster than other machines of its capacity.

The Model K provides maximum efficiency in all operations — moving, drilling, handling casing, etc.—to cut drilling costs to the extremely low figure shown above.

Larger size Star Spudders offer corresponding economies on deeper drilling.

Write our nearest office for complete information.

STAR
THE MARK OF QUALITY

THE STAR DRILLING MACHINE COMPANY
AKRON, OHIO, U. S. A. • Branches: CHANUTE KANSAS · PORTLAND OREGON · ABILENE TEXAS

MAKERS OF CABLE TOOL MACHINES AND CABLE TOOLS FOR FIFTY YEARS

EAST BATON ROUGE PARISH—Cavalier Oil Co.'s Elliott 1, n of Hope Villa, 3-8s-2e, dr shale 480 ft.

IBERIA PARISH—Jefferson Lake Oil Co.'s Lake Peigneur 414, Jefferson Island, 12s-5e, sd 7071 ft. Texas Co.'s State 2-B, Vermilion Bay, 16s-5e, dr shale 8610 ft.

JEFFERSON DAVIS PARISH—Continental's Fay 1, se of South Roanoke, 31-10s-3w, dr shale 8586 ft. Union Sulphur's Calcasieu National Bank 1, e of Woodlawn, 12-9s-8w, dr shale 7984 ft. Humble Oil & Refining Co.'s Stegall 1, nw of Welsh, 20-9s-5w, dr shale 4178 ft.

LAFOURCHE PARISH—Amerada and Louisiana Land & Exploration Co.'s South Coast Corp. 1, Raceland area, 34-15s-19e, dr shale 9319 ft. Gulf's State PP 3, Timbalier Bay area, 36-23s-21e,doing geophysical work at 8728 ft. William Helis' City of New Orleans 2, Marchland prospect, 19-23s-23e, dr salt 7965 ft.

PLAQUEMINES PARISH—Gulf's State QQ 3, Quarantine Bay, 17-19s-17e, woc 8144 ft.

ST. MARTIN PARISH—Texas Co.'s St. Martin Land 10, Henderson area, 15-8s-7e, dr shale 8118 ft.

ST. MARY PARISH—Texas Co.'s State 1, Bateman Lake area, 21-16s-12e, pulling on stuck dr pipe at 10,475 ft. Shell's Barbour 1, Glenwild area, 21-15s-12e, dr shale 6080 ft.

TERREBONNE PARISH — Barnsdall Oil Co.'s Dibert, Starks, and Brown 1, n of Gibson field, 10-16s-15e, dr shale 10,437 ft.

MICHIGAN

ALCONA COUNTY—Thalman & Morris' Kohlman 2, 10-26n-7e, 5 in 2950 ft, dr Sylvania lime 2980 ft.

BAY COUNTY—Fortney Oil Co.'s Smart 1, 7-16n-5e, dr 100 ft. Charles Weller's Dewyer 1, 20-16n-3e, Berea 2110 ft, hfw 2117 ft, csg 6 in. Stork Oil Co.'s Century 1, 9-17n-3e, dr 1600 ft.

CLARE COUNTY—Sun Oil Co.'s Weldon 1, ne ne se 14-19n-3w, rig. Wittmer Oil Co.'s Palomar 1, 2-18n-5w, dr 1200 ft. McClanahan Oil Co.'s Mortenson 1, 9-18n-5w, fsg 1665 ft.

GLADWIN COUNTY—Durham & Jones' LaFurgey 1, 20-17n-2e, dr 1600 ft. Fortney Oil Co.'s State 1, 33-17n-2e, 6 in 1076 ft, dr 1500 ft. McClanahan Oil Co.'s Connoly 1, 35-17n-2e, dr 100 ft; Reua 1, 11-17n-1e, dr 2300 ft. Charles McLaughlin's Simmons 1, 28-19n-2w, dr 2400 ft. Whitehill, Clovs & Drury's Bosley 1, 11-19n-1e, testing so 3454 ft (Dundee 3362).

GRATIOT COUNTY — Turner Petroleum Co.'s Wiley 1, 5-11n-3w, dr 600 ft. Red Man Oil Co.'s Creaser 1, 18-11n-5w, sd 3115 ft.

HURON COUNTY — L. D. Hendershot's Klamp 1, 1-17n-14e, sd 2029 ft. C. W. Teater's Martin 1, 15-15n-11e, dr 450 ft.

ISABELLA COUNTY—Cryden & Rowmor's Smith 1, 35-15n-5w, csg 2 in, 1411 ft. J. G. Zabel's Kennedy 1, 25-14n-4w, dr 1100 ft.

MIDLAND COUNTY—Sun Oil Co.'s State B1, 5-16n-1w, dr 3100 ft. Daily Crude Oil Co.'s State 1, 29-15n-2e, dr 350 ft.

MONROE COUNTY — Milburn Violette's Russell 1, 5-6s-7e, dr 1960 ft. Olmstead Trustee's Frink 1, 25-5s-6e, dr 330 ft.

MONTCALM COUNTY — H. L. Gentry's Christensen 1, 29-11n-8w, sd 1196 ft. Hirzel-Leland Dev.'s Hansen 1, 31-10n-7w, dr 900 ft.

NEWAYGO COUNTY — Midstates Corp.'s Eichenberger 1, 7-16n-11w, dr 2890 ft. Muskegon Dev. Co.'s Carlson 1, 9-16n-12w, fsg 3168 ft.

OTSEGO COUNTY—Barton & Williams' Yuill 1, 9-32n-3w, dr 1030 ft.

OTTAWA COUNTY—Albert Maring's Flagel 1, 3-7n-14w, dr 400 ft. Morris Sutherland's Brandt 1, 36-5n-14w, dr 900 ft.

ROSCOMMON COUNTY — Franklin Pet. Co.'s Helen 1, 26-23n-2w, dr 410 ft. Maynard Smith's Eggleston 1, 32-21n-2w, dr 600 ft.

SAGINAW COUNTY—Bridgeport Oil Co.'s Tobias 1, 35-11n-5e, dr 1650 ft. Weber Oil Co.'s Uebler 1, 9-11n-6e, dr 1760 ft. Bond Oil Co.'s Schoonmaker 1, 1-11n-1e, csg 5 in 3200 ft, so.

TUSCOLA COUNTY—Frank Norton's Vorhees 1, 8-12n11e, dr 2500 ft. Brehm & Jaenicke Oil Co.'s Boyce 1, 24-14n-7e, Dundee 2565 ft, so 2620 ft, testing.

MISSISSIPPI

FRANKLIN COUNTY—Fred E. Courson's Homochitto Lbr. Co. 2, 300 ft n c 18-5n-3e, sg 756-62 ft, dr 2172 ft, sandy shale.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, spd, arr set 10 in csg 1500 ft.

HINDS COUNTY—Southern Nat. Gas Co.'s Angelo Williams 1, ne nw 35-6n-4w, elev 183 ft, 22 in csg 89 ft, 13⅜ in csg 416 ft, dr 500 ft.

LAMAR COUNTY—Sun Oil Co. et al's Mrs. Kate Talley 4, se nw 33-4n-15w, dr 5402 ft, chalk. South Miss. Oil Co.'s Morris 1, sec 4-2n-14w, spd & sd.

PERRY COUNTY—Phillips et. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-2n-10w, rur.

WILKINSON COUNTY—A. B. Taylor et al's Foster Creek Lbr. Co. 2, sw sw 31-4n-2w, mim.

OKLAHOMA

ATOKA COUNTY—C. M. Sheldon & Gardner Pet. Co.'s Lee 1, ne nw sw 2-4s-10e, A w/100 gals to loosen stuck drills. Hagey et al's Becker 1, cne¼ 4-1n-13e, td 3010 ft, to pb; Peck 1, cne¼ 6-1n-13e, woc 2766 ft.

CADDO COUNTY—I.T.I.O. Co.'s Dome-Bo 1, cne se 29-6n-10w, td 5255 ft, 9 in csg parted, sdo.

CLEVELAND COUNTY — Harper & Turner's Pollock 1, cw½ nw nw 13-9n-2w, dr 6225 ft.

COAL COUNTY—Phillips Pet. Co.'s Beck 1, se sw sw 6-1n-9e, dr 4852 ft. Carter Oil Co. et al's Claytor 1, cw½ ne sw 27-2n-9e, td 6342 ft, taking dst.

COMANCHE COUNTY—J. W. Wolfe's Costinus 1, sw sw se 30-4n-11w, spd. Frank Scott's Kuntz 1-A, se ne se 27-4n-11w, sd 2800 ft.

COTTON COUNTY—Bowers & Wise's Pendergraft 1, nw se sw 4-4s-12w, sd for rot tools. J. W. Amyx' Ash 1, se se se 7-4s-10w, dr 740 ft.

GARFIELD COUNTY—H. R. Hollenback et al's Clark 1, nw nw nw 34-21n-6w, dr 4120 ft.

GARVIN COUNTY—Carter Oil Co.'s Potts 1, ce¼ se nw 36-1n-3w, dr 3647 ft. B.C.D. Edwards' Clark 1, ne ne ne 16-3n-3e, dr 2460 ft.

GRADY COUNTY—Gulf Oil Corp.'s Thomas 1, sw nw nw 14-4n-5w, dr 8719 ft. Doyle Pet. Co.'s Huffine 1, nw nw se 30-5n-8w, der.

GRANT COUNTY—Magnolia Pet. Co.'s Reynolds 1, ne ne se 19-25n-5w, rur.

HUGHES COUNTY — Phillips Pet. Co.'s Becker 1, ne nw sw 8-5n-10e, td 4425 ft, to dd. Pure Oil Co.'s Rogers 1, se se ne 18-8n-12e, dr 4250 ft. Homer Doup et al's Band 1, ne ne nw 7-7n-9e, rust & sd.

JOHNSTON COUNTY—Patton et al's McCrummens 1, sw sw ne 16-1s-6e, sd 1380 ft. W. T. Shelton's Chapman 1, cnw nw 26-4s-6e, ur 6 in csg 2000 ft.

KIOWA COUNTY—Hughes & Reese's Fultz 1, se se se 10-6n-18w, ur 8¼ in csg.

LINCOLN COUNTY—C. L. Carlock et al's Young 1, cn½ nw nw 23-15n-5e, td 3880 ft; sd for wtr. Riley & Talbott et al's Weidler 1, nw sw nw 20-17n-2e, cor 4991 ft.

LOGAN COUNTY—Anthony & Marshall's Fruin-Eckman 1, se se sw 4-16n-1e, so & g, sd 5181 ft. The Texas Co.'s Roper 1, cw½ sw se 22-15n-1e, dr 3570 ft.

MARSHALL COUNTY—Paul Robb et al's Vittitoe 1, cne se 11-5s-4e, sd 720 ft. F. W. Merrick, Inc.'s Robbinson 1, ne ne ne 33-7s-4e, dr 2542 ft.

OKFUSKEE COUNTY — Burke-Greis' Rhea 1, sw sw se 14-10n-9e, 7 in csg stuck at 3303 ft, run 5 in. F. W. Merrick's Mackey 1, ne ne sw 29-11n-10e, td 4062 ft, d & a. Mid-Continent Pet. Corp.'s Ireland 1, sw ne sw 10-13n-10e, rig.

OKMULGEE COUNTY—Phillips Pet Co.'s Wood 1, nw sw sw 31-11n-13e, bldg rig.

PAYNE COUNTY—H. S. Brim et al's Mc-

HOUSTON
Cotton Exchange Building

LOS ANGELES
Associated Realty Building

EL PASO
First National Bank Building

F. G. MASQUELETTE & CO.

Accountants and Auditors

Federal Tax Counselors

AUDITS
SYSTEMS
INVESTIGATIONS
COST ACCOUNTING

Ask the Man Who Pulls 'Em!

Yes, you'll find these O'Bannon Pumping Accessories first choice wherever **safety** is the watchword of the gang foreman.

O'Bannon "S" Link

Permits you to connect line and hook quickly, with **safety.**

O'Bannon Frontlock Safety Sucker Rod Hooks

Fast working—Easy to operate with **safety.**

O'Bannon Safety Sucker Rod Elevators

Are sure hold on rod until operator releases—**safety.**

O'Bannon Hinged Bell Nipple

Serves as a seat for elevator, protects threads in Tee, and guides rod into tubing.

AT YOUR SUPPLY STORE

Manufactured by
Walter O'Bannon Company
Tulsa, Oklahoma

O'BANNON
SAFETY
PUMPING
ACCESSORIES

Kenzie 1, cwl se ne ne 13-18n-3e, c & p. Stanolind O&G & Amerada Pet Corp.'s Bennett 1, nw se ne 31-19n-4e, c & p and bldg rig.

PITTSBURG COUNTY — Okla. Dist. Oil C.'o Beeler 1, ne ne sw 7-7n-14e, dr 5518 ft. Phillips Pet. Co.'s Gilcrease 1, nw nw se 16-7n-12e, dr 4932 ft.

PONTOTOC COUNTY—Norbla Oil Co.'s McBride 1, ne ne sw 10-2n-5e, lcn abd. Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, dr pipe stuck, sd. Boettcher O&G Co.'s Gann 1-A, se nw ne 25-4n-7e, td 4347 ft, junked hole & abd.

PUSHMATAHA COUNTY—Erle Halliburton et al's Bagwell 1, sw ne ne 30-2s-15e, dr 5760 ft.

SEMINOLE COUNTY—Stanolind, Amerada & Mid-Continent Pet. Corp.'s Salina 1, se ne nw 4-5n-6e, pb 3185 ft to test Hunton lime. J. F. Root's Cone 1, nw ne sw 11-7n-5e, c & p. W. B. Osborn et al's Harris 1, nw nw nw 11-6n-5e, bldg rig.

STEPHENS COUNTY — Coline Oil Co.'s Johnson 1, sw se ne 1-2n-8w, testing. Ed Parsons et al's Blake 1, csw nw 22-2n-8w, dr 5255 ft. Newsom's Pfile 1, sw sw sw 1-2s-7w, sdo 3551 ft, cont comp. Jack Cohen's Pierce 1, ne ne nw 24-2s-6w, dr 1770 ft.

TILLMAN COUNTY — Gulf Oil Corp.'s Prichard 1, se nw se 32-3s-16w, td 5715 ft, d & a.

WASHITA—L. B. McWhirter et al's Fee 1, nw sw sw 34-8n-19w, sd 1810 ft. John Koberg's Harms 1, nw nw ne 6-10n-16w, td 4260 ft, sdo.

TEXAS GULF COAST

BRAZORIA COUNTY — Pure's Smith 1, Peach Point area, S. F. Austin sur, dr shale 4379 ft.

CHAMBERS COUNTY—Ingot and Merit Oil Co.'s Wright 1, Cedar Bayou area, C. Smith sur, testing 6433 ft.

FT. BEND COUNTY—Chapman Minerals Corp.'s Sugarland Industries 1, s of Sugarland, G. Brown sur, dr shale 4028 ft.

JEFFERSON COUNTY — Shell's McFaddin 1, McFaddin Ranch area, S. A. Pace sur, dr shale 2715 ft.

LIBERTY COUNTY—Humble's G. A. Moore 1, Devers area, M. Whittington sur, dr shale 1171 ft.

MATAGORDA COUNTY—Sun's Robbins 1, n of Citrus Grove, C. H. Vandeveer sur, dr shale 4081 ft.

WALLER COUNTY—J. Bryan Eby et al's Rice 1, Waller prospect, J. H. Stephen sur, dr shale 4525 ft. Humble's South Texas Development Co. 1, W. Hillhouse sur, lcn.

SOUTH TEXAS

DUVAL COUNTY—T. R. Andrews' A. Hazelwood 1, surveys 559 & 357, drk. J. L. Collins & Co.'s E. R. Hagist 1, sur 267, sp. Gier & Kone's W. R. Peters 2, sur 38, pb & set 5½ in 1866 ft, wocs. Frank J. Gravis' F. Vaello et al 1, San Andres gr, dr 659 ft; R. Schallert 1, sur 239, dr 1900 ft. Lockhart Bros.' R. J. Rogers 1, sur 277, fsh for bit 4135 ft. Magnolia's DCRC 1, BS&F sur 261, dr 2590 ft; D. Ruiz 1, sur 190, dr 5255 ft. Rudco O&G Co.'s K. L. Ellis 1, GC&SF sur 308, dr 1865 ft. Wellington's J. F. Welder Heirs 8-D, sur 381, cement gave way, mkg est 90 percent sw, recementing 1720 ft.

McMULLEN COUNTY — Adams and Lefevre's M. Selman 2, sec 58, woc, 10 in sur csg. Alabam Minerals' M. Gordon 2, sur 127, coring 2000 ft, dst Chernoskey sand 1981-96 ft, was dry. H. K. Boysen et al's Munson Ranch 1, CEPI&M sur 161, lcn. Gilcrease O&G Co.'s A. C. Miles 1, Charles Stephens sur, dr 1400 ft. V. G. Schimmel et al's L. Kountz Est. 1, E T RR Co. sur, abnd 2370 ft.

STARR COUNTY—J. L. Collins & Co.'s A. Guerra 1, sh 6, dr 4835 ft. Dean Bros.' M. Valadez 1, por 84, ru pumping equipment, 200 ft oih several weeks, prod from 1866-72 ft. Henshaw Bros. & Davis' M. M. Garcia 1-A, por 89, sd 3250 ft. Moss & Heard's S. B. Ricaby 6, J. of Camargo, dr 1295 ft. Sun's H. P. Guerra 1-F, J. S. Garcia gr, sd repairs 1184 ft. Transwestern's T. B. Slick School 1, sur 266, cutting out ds 4100 ft.

WEBB COUNTY—Mills Bennett Prod. Co.'s A. E. Gates 1, W. A. Cavitt gr, coring 1445 ft; Maria G. Martin 2, sec 458, coring 2528 ft. O. W. Killam's A. M. Bruni Est. 4, sur 585, mim & ru; J. G. Garcia 1, blk 26, abn 3001 ft in sh. Lemp Oil Co.'s N. H. Clark 1, por 33, dr 205 ft. C. H. Lewis' C. G. de la Garza 1, sec 48, dr 305 ft.

SAN ANTONIO DISTRICT

ATASCOSA COUNTY—L. W. Stieren's T. A. Crawford 1, J. O. Crawford sur 69, coring 3357 ft, brkn Serpentine & Taylor 3348-52 ft w/oil show.

CALDWELL COUNTY—R. T. Belcher & Chas. Shreiner's Mrs. G. Moody 1, S. Seal sur, bailing 2170 ft. Ellmag Oil Corp.'s Willie Pope 1, J. D. Rains usr, acidized w/500 gal, pumped 20 bph sul/wtr, slight oil/show, 2730 ft. Heard et al's R. E. Brown 1, P. B. McCearley sur, sd 2460 ft, had slight oil show. McNeill Pet. Co.'s F. Marino 1, I. Allen sur, dr 675 ft. I. H. Wilson's C. A. Alexander 1, Dorothy Benton sur, dr 1120 ft.

FRIO COUNTY—Amerada's R. Melms 1, N. C. Alexander sur, dr 250 ft. Pagenkopf & Jamieson's Houston Est. 1, Juan Figuerroa sur, pumping 15 to 20 bpd oil, 200 bpd wtr, no potential made yet, 2651 ft.

GUADALUPE COUNTY — Housel Oil Corp.'s N. J. Carter 2, Samuel Highsmith sur, dr 2063 ft. Mehu Oils, Inc.'s Wm. F. Schulze 1, Felix Chenault sur, dr 1610 ft. Wellington Oil Co. of Delaware's A. Koepp 1, Wm. H. Smith sur, cored sat ch 1575 ft.

MILAM COUNTY — Kingdorr Exploration Co.'s M. Stidham et al 1, J. P. Jones sur, dr plugs 3816 ft.

WILSON COUNTY—Pat. Higgins' Mrs. Annie Higgins 1, A. Trevino sur, dr ahead 2100 ft. Wm. D. Parkinson's O. F. Burney 3, S. & J. Arocha gr, set 6 in csg, 650 ft.

CORPUS CHRISTI DISTRICT

GOLIAD COUNTY—Jane Oil Co.'s O. A. Mudd 12, Brooks & Burleson sur 25, lcn. Rual B. Swiger et al's Carrie Wood 1-B, John Shearn sur, dr 2970 ft.

HIDALGO COUNTY—Atlantic Ref. Co.'s Mrs. E. T. McCalip 1, sec 175, coring ahead 8147 ft. Gulf States Oil Co.'s Delta Orchards 2, sec 94, dr 4415 ft. Y & B Oil Co.'s Waite Bros. 1, sh 382, coring 5320 ft.

JACKSON COUNTY—Hargrove & Crosby's Hodges 1, sur 7, ru. Hargrove & Echols' Mike Strauss 1, A. N. Clare sur, dr 5424 ft.

JIM WELLS COUNTY—H. M. Hill et al's B. Kuether 1, SK&K sur, dr 750 ft. Magnolia's Seeligson 7, Los Jaboncillos sur, coring hard sand 8165 ft. Pratt & Tsesmelis' J. R. Talbert 1, La Vaca gr, ran electrical formation tester 5499 ft.

KARNES COUNTY—Ivan Howard's F. P. Moczygamba 1, E. Seguin sur 5, set csg, woc 2178 ft.

LIVE OAK COUNTY—R. Bumpus & R. W. Burnett's C. F. Simmons 1, blk 42, lcn. Lewis Franklin's L. Odem 1, R. Everett sur, dr 1025 ft.

NUECES COUNTY—Culton & Meaders' J. L. Bailey Est. 1, blk 65, coring 4510 ft. L. A.

You'll Strike Plenty of Comfort...

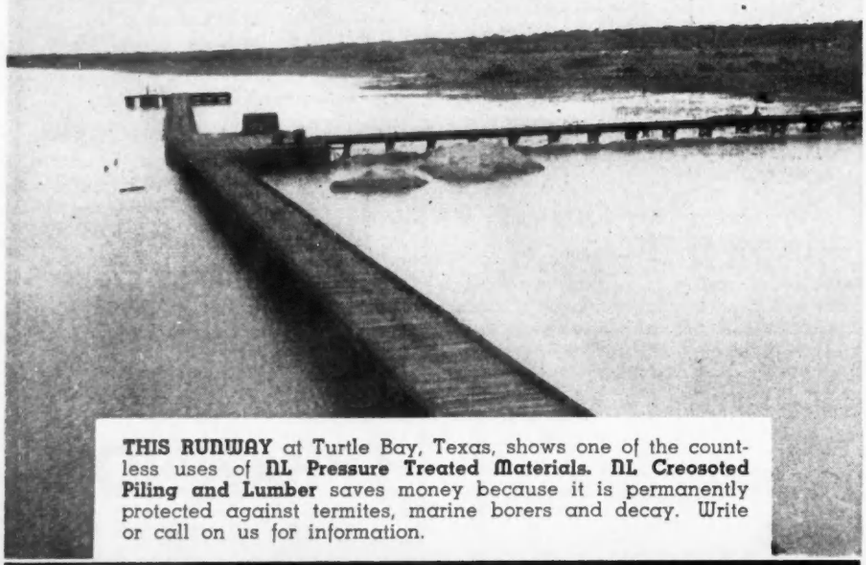
if you head for the Savoy-Plaza when you arrive in New York. Overlooking Central Park and convenient to all of the city's attractions, this hotel is famous for its cheerful rooms, excellent service, tempting cuisine and popular entertainment.

SAVOY-PLAZA

Henry A. Rost, Managing Director • George Suter, Resident Manager

FIFTH AVENUE, 58th TO 59th STREETS • NEW YORK

Here's where NL TREATED MATERIALS Save Money



THIS RUNWAY at Turtle Bay, Texas, shows one of the countless uses of NL Pressure Treated Materials. NL Creosoted Piling and Lumber saves money because it is permanently protected against termites, marine borers and decay. Write or call on us for information.

NATIONAL LUMBER & CREOSOTING COMPANY

(INCORPORATED)

SUBSIDIARY OF THE WOOD PRESERVING CORPORATION

TEXARKANA, ARK.-TEX. HOUSTON, TEXAS

LOOK FOR THE (N) ON EVERY PIECE. IT'S YOUR GUARANTEE FOR PERMANENT PROTECTION

Douglas' Charles McKinzie 1, sur 417, lcn. Richardson's B. Cunningham 1, sec 77, coring 4165 ft. Sannix Oil Co.'s Emil Nesloney 1, Casa Blanca gr, coring 4815 ft. Southern Minerals' R. King 2, blk 6, sec 7 in 4060 ft in pb/hole. Sultex Oil Co.'s L. M. Vance 5, Thomas Gallagher sur, killed to rework, tested sw, perfs 6897½-6901 ft. Union Prod. Co.'s C. L. Gallady et al 1, Agua Dulce gr, woc 1492 ft; A. B. Simmonds 1, Agua Dulce gr, dr 5509 ft.

REFUGIO COUNTY—Hogan Oil Co.'s J. S. Kelley 1, J. Power sur, dr 5405 ft. Illinois Pet. Co.'s M. H. Ryals Est 1-C, Refugio Town gr, testing 7141 ft.

SAN PATRICIO COUNTY — Argo Oil Corp.'s A. Soehnge 1, PJ&M Delgado gr, dr 6248 ft.

VICTORIA COUNTY—W. V. Bowles & Co.'s D. L. Robertson Est. 1, T. D. Burnham sur, dr 3636 ft. Gulf's Mahon & Buehler 1, J. Poitevent sur 2, coring 6934 ft.

WILLACY COUNTY—Magnolia's F. Armendiaz 1, San Juan de Carricitos gr, dr 5875 ft. Shell's Yturria Cattle Co. 2, San Juan de Carricitos gr, coring 7705 ft.

WEST TEXAS

(North Portion of Permian Basin)

ANDREWS COUNTY—Gulf Oil Corp.'s University 1-G, ne ne nw sec 8, blk 14, elev 3208 ft, top anhydrite 1700 ft, gas blowout in Yates sand 2997 ft, co after rust at 4100 ft.

BAILEY COUNTY—Geo. Ftz & E. H. Robertson's I. C. Enochs 1, c labor 66, blk 132, Floyd C. S. L. sur, dr 2580 ft. J. O. Whittington et al's McCelvey 1, c labor 12, league 162, Presidio C.S.L. sur, elev 3942 ft, top anhydrite 2000 ft, top salt 2140 ft, dry and abd in sul water 4150-4608 ft.

COCHRAN COUNTY—Devonian Oil Co.'s T. B. Duggan 1, NWc labor 11, league 55, Oldham C.S.L. sur, elev 3680 ft, top anhydrite 2160 ft, top Yates 2880 ft, top first lime 3820 ft, top solid lime 4180 ft, pay 4998-5019 ft, testing. J. R. Meeker et al's Mrs. D. Slaughter Wright 1, NWc sw¼ labor 26, league 96, Mills C.S.L. sur, lcn. P. N. Wiggins Jr., C. Ed Hyde et al's C. S. Dean-Slaughter (Honolulu) 1, NEc league 58, Martin C.S.L. sur, elev 3686 ft, 1 bailer sul w per hr 5070-85 ft, dr 5085 ft; C. S. Dean-Slaughter 1, labor 26, league 92, Lipscomb C.S.L. sur, elev 3730 ft, top anhydrite 2270 ft, top Yates 2868 ft, top lime 4220 ft, broken pay 5004-20 ft, used acid twice and shot 200 qts 4993-5020 ft, co to td and swab 162 bbls oil 5 hrs.

GAINES COUNTY—Amerada Pet. Corp.'s E. C. Brand 1, SEc n½ PSL sec 54, blk AX, elev 3584 ft, top anhydrite 2168 ft, top salt 2266 ft, jkd and abd 4484 ft; S. J. Averett 1, c se ne of W. T. Ry. sec 228, blk G, elev 3323 ft, top anhydrite 1990 ft, dr 3510 ft. American Liberty Oil Co.'s W. N. Willard 1, SWc sec 38, blk AX, PSL sur, rur. Amon G. Carter et al's E. C. Brand 1, SEc PSL sec 54, blk AX, lcn; E. C. Brand 2, NEc se¼ sec 54, top anhydrite 2145 ft, dr 2400 ft; G. M. Langdon 1-A, nw nw ne PSL sec 43, blk AX, dr 4830 ft. Amon G. Carter, Continental & Plymouth Oil Co.'s H. Giesecke 1, NWc labor 1, league 296, Reagan C.S.L. sur, sd in red rock and lime 2100 ft. Continental Oil Co.'s E. H. Jones 2, c se ne PSL sec 1, blk A-8, elev 3632 ft, top anhydrite 2011 ft, top salt 2060 ft, top Yates 2990 ft, top brown lime 4646 ft, cem 7 in 4674 ft, rust at 4680 ft; A. L. Wasson 1-B-53, NEc se¼ PSL sec 53, blk AX, rur. Conoco-Amon G. Carter's A. L. Wasson 2, NEc PSL sec 48, rur; Wasson 3, SEc sec 48, mim; Wasson 4, SWc sec 48, dk. R. H. Gill et al's S. R. Simpson 1, near ne nw ne PSL sec 8, blk C-44, elev 3226 ft, top anhydrite 2210 ft, top salt 2240 ft, top Yates 3285 ft, dry and abd in sul water at 5502 ft. Humble's T. S. Riley 1, NEc sec 381, blk G, CCSD&RGNG Ry. sur, top anhydrite 2120 ft, dr 4990 ft. Mitchell & Sullivan's T. S. Riley-Shell 1, c ne ne sec 447, blk G, CCSD&RGNG sur, dr 800 ft. Ohio Oil Co.'s S. J. Averitt 1, c nw ne of W.T. Ry. sec 228, blk G, elev 3349 ft, pay 5027-73 ft, used 15,000 gals acid, completed flowing 168 bbls fluid, 8 percent bs&w and 3,000,000 ft gas. Shell Pet. Corp.'s R. A. Cox 1, NEc sec 380, blk G, CC&SDRG&NG Ry. sur, top anhydrite 2040 ft, dr 3000 ft. Wm. F. Hannigan et al's P. C. Dunbar-Stanolind 1, sw¼ PSL sec 24, blk A-12, lcn.

MARTIN COUNTY—J. L. Greene, R. C. Conkling & T. R. Parker's O. B. Holt 1, labor 20, league 319, Garza C.S.L. sur, elev 2907 ft, top anhydrite 2050 ft, top salt 2070 ft, top Yates 2990 ft, dr 3200 ft. Harris-Anderson Corp.'s Mrs. M. Robinson 1, sw¼ of T&P Ry. sec 33, blk 36, T-1-N, lcn.

YOAKUM COUNTY—American Liberty Oil Co.'s C. A. Thomas 1, near NWc sw¼ sec 864, blk D, J. H. Gibson sur, cem sur csg. Denver Producing & Ref. Co.'s J. A. Whittenburg 1-A, c nw nw sec 830, blk D, J. H. Gibson sur, elev 3619 ft, dr 4560 ft; Whittenburg 2, c ne ne sec 381, blk D, elev 3623 ft, rur. J. L. Greene et al's L. B. Nevels-Standard 1, NEc se¼ sec 709, blk D, elev 3695 ft, top anhydrite 2180 ft, top Yates 3120 ft, top brown lime 4100 ft, top solid lime 4630 ft, dr hard lime 5380 ft. Honolulu Oil Corp.'s R. E. Bennett 2, ne se ne sec 677, blk D, J. H. Gibson sur, dr 1500 ft. J. W. Murchison & L. Fikes' C. A. Elliott 1, c ne ne sec 832, blk D, elev 3613 ft, top anhydrite 2120 ft, top Yates 2910 ft, tod 5070 ft, used 1000 gals acid and reacidized with 3000 gals, flowing into pits; M. B. Sawyer 1, c sw se sec 702, blk D, mim. Phillips Drlg. Co.'s W. A. O'Brien 1, NEc sec 441, blk D, J. H. Gibson sur, lcn. E. H. Pitkin & Lou Stogner's Blades 1, c ne ne sec 103, blk D, lcn. Producers Investment Corp.-American Liberty Oil Co.'s L. N. Clawater-Amerada 1, c sw sw sec 766, blk D, elev 3617 ft, top anhydrite 2190 ft, top brown lime 4010 ft, top solid lime 4465 ft, td 5083 ft, used 1000 gals acid and flowed 252 bbls oil first 24 hrs and 165 bbls second 24 hrs. Shell Pet. Corp.'s Geo. Baumgart 1, 440 ft fr w & 1320 ft fr s lines sec 828, blk D, dr 1500 ft; R. E. Bennett 1, ne se ne sec 677, blk D, lcn; J. H. Lynn 1, c sw sw sec 798, blk D, lcn. Skelly Oil Co.-Sun Oil Co.'s J. A. Kiser 1, c ne ne sec 640, blk D, elev 3657 ft, top anhydrite 2183 ft, base salt 2890 ft, top Yates 2980 ft, top brown lime 4045 ft, top solid lime 4540 ft, dr 4800 ft. Standard Oil Co. of Texas' M. B. Sawyer 1, c se se sec 576, blk D, elev 3669 ft, top lime 4590 ft, shot 1000 qts nitro 5190-5400 ft, td 5403 ft, showing oil and little water, co cavings. The Texas Co.'s W. F. Walker 1, c se se sec 794, blk D, elev 3656 ft,top anhydrite 2110 ft, top Yates 2990 ft, top solid lime 4450 ft, pb fr sul w at 5177-80 ft to 5162 ft, shot twice and acidized, completed swabbed 68 bbls fluid in 7 hrs. P. N. Wiggins, Jr. et al's Bartlett 1, NEc sec 359, blk D, elev 3780 ft, top anhydrite 2320 ft, dr 4540 ft.

EAST TEXAS BORDER COUNTIES

HARRISON COUNTY—Eastern Shrevetex Oil Co.'s Mable George 1, J. S. Powell sur, wosk td 2505 ft. J. B. Bond's Bailey & Martin 1, Geo. Martin sur, blew out head of gas, sd td 6518 ft. Ark. Fuel Oil Co.'s C. M. Abney's Eason Wilson sur, mim.

PANOLA COUNTY—Danciger O&R Co.'s J. W. Tatum 1, Alfred Bissell sur, massive anhydrite 4880-5175 ft, 5-3/16 in csg at 6350 ft, perf and estd four times, arr perf and test again, td 6514 ft. Magnolia Pet. Co.'s E. A. Hull 2, Thos. Applewhite sur, elev 222 ft, top Travis Peak 6024 ft, top lower Marine 8078 ft, fsh td 8718 ft.

SHELBY COUNTY—Allen et al's George 1, C. C. Tutt sur, sd 2950 ft, chalk. C. L. Cope's Pickering Lbr. Co. 1, Stephen English sur, rur. Portex Oil Co.'s Pickering Lbr. Co. 3, A. Hanson sur, mim. Redditt & Gray's Pickering Lbr. Co. 8, S. O. Pennington sur, rur.

PATENTS
Patents, Trade Marks, Copyrights and Infringement Litigation
HARDWAY & CATHEY
428-29-30 Bankers Mortgage Bldg.
Phone Capitol 9756 Houston, Texas

William M. Barret, Inc.
Consulting Geophysicists
Specializing in Magnetic Surveys
Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique
GIDDENS-LANE BUILDING
SHREVEPORT, LOUISIANA

In Philadelphia, Pa. it's the
HOTEL PHILADELPHIAN
39th and Chestnut Sts.
600 ROOMS, each with BATH
Single, $2.75 — Double, $4.40
Coffee Shop, Cocktail Corner and Bar

DAVID DONOGHUE
Consulting Geologist
Appraisals • Proration • Statistics
Fort Worth National Bank Building
FORT WORTH, TEXAS

JACK A. SCHLEY
Patent Attorney
(Established 1902)
PATENTS—INFRINGEMENTS—OPINIONS
San Antonio—Washington, D. C.
2014 SECOND NAT'L BK. BLDG.—HOUSTON
1807-11 TOWER PETROLEUM BLDG.—DALLAS

THE FORT WORTH LABORATORIES
Analyses of oil field brines, cores, gas, oil, and minerals. Field gas testing. R. H. Fash, Vice-President; Long distance 138. 828½ Monroe Street, Fort Worth, Texas.

Fifteen Years Practical Experience
REPRESSURING
JO H. CABLE
PETROLEUM ENGINEER
Wichita Falls, Texas

HOARD EXPLORATION COMPANY
Seismograph Surveys
618 Esperson Bldg.
Houston Texas

County Ownership & Oilfield Maps
ZINGERT FORT WORTH ZINGERT
OIL MAP COMPANY

GEOPHYSICAL SOIL SURVEYS FOR OIL
10 Sample Survey $50. Total Cost: Mid-West

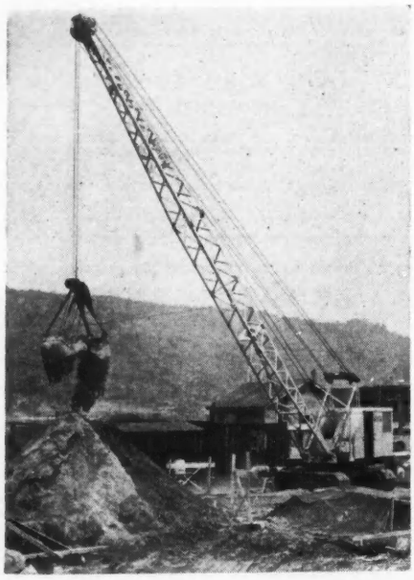
GEOLOGICAL SCIENTIFIC SERVICE CO.
FORT WORTH 957 E. Davis TEXAS

Insurance on Oil and Gas Properties
•
Nationwide Engineering, Rate and Safety Service.
•
Inquiries Solicited Through Your Agent or Broker.
Cravens, Dargan & Company
Insurance Managers
HOUSTON, TEXAS
Established 1903

NEW PRODUCTS FOR THE FIELD
Machinery • Tools • Equipment

POWER SHOVEL
Bucyrus-Erie Company

The 33-B, a 1¼-yard excavator convertible for shovel, dragline, clamshell, crane, or dragshovel service has recently been announced by the Bucyrus-Erie Company, South Milwaukee, Wisconsin. Modern alloy steels and welded construction have been used to produce a machine that combines smooth working operation, high speed, high mobility, and ample strength to give steady dependable service in the heavy digging expected of a machine of this size, according to the manufacturer.



Bucyrus-Erie Power Shovel

The machine is suited for work in oil fields, pipe line trenches, etc. Used as a crane, it efficiently handles derrick and machinery equipment of all kinds.

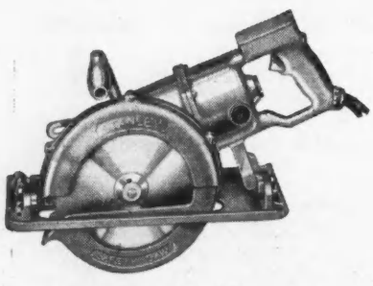
The 33-B has features which warrant attention. A few of them are: unusually long caterpillar frames to reduce "nosing in" when digging; welded box-girder boom; powerful hoist and chain crowd; dipper having manganese steel casting, "V" type front; all high speed shafts operate on ball or roller bearings; snappier swing action; big wide-faced clutches that take hold smoothly and firmly, and simple lubrication.

In the 33-B, power rides an anti-friction bearing direct to the point of action. This simplicity means less friction, easier acceleration, higher cycle speed and quicker control. A choice of three different types of power is offered: gasoline, Diesel, or electric.

SAFETY SAW
Stanley Works

Stanley Works, Electrical Tool Division, New Britain, Connecticut, has announced a new motor-driven safety saw that handles like a hand saw and has a cutting capacity of 3¼ inches. It also has a tilting base for making bevel cuts up to 45 degrees in 2¼-inch material. It is a fast cutting saw equipped with stationary and swinging guards which keep the cutting edge of the blade covered at all times, affording protection to the operator.

The housing is heat-treated aluminum alloy. The gears are heavy-duty ground heat-treated alloy steel worms and over-size bronze worm wheel which run in a large grease chamber, assuring constant lubrication and smooth operation. Other features are a momentary contact, heavy duty double-pole switch, positive cord clamp, and notched base for ease in following cutting line.



Stanley No. W9 Safety Saw

This No. W9 safety saw is packed in metal carrying case with one combination saw blade, ripping gauge, wrench, lubricant and heavy rubber covered three-wire cable. Other saw blades are available at extra equipment.

NEW ROTARY CHAIN
Link-Belt Company

Link-Belt Company, 220 South Belmont Avenue, Indianapolis, Indiana, recently announced the development of a new power transmission chain, known as SS-3125 Hyper, for high speed rotary drilling service. This chain is of 3.125" pitch and operates on cut tooth wheels. It is made in single and double widths, the single chain having an ultimate strength of 115,000 pounds, and the double-width chain 230,000 pounds.

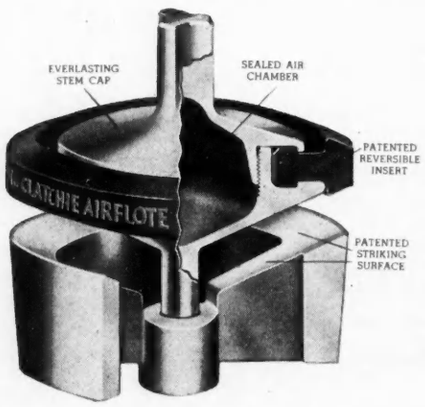
According to the manufacturer, the Hyper rotary chain has been designed to withstand, with ease, the high speeds and heavy loads encountered in present-day drilling service.

The features of this new rotary chain may be summed as follows: (1) Short pitch combined with strength and light weight permits the use of smaller diameter wheels and higher speeds; (2) design of chain provides ample strength and length of sprocket wheel; (3) it operates on cut tooth wheels, which reduces noise and vibration; (4) double width chain combines great strength with short pitch and minimum practical width of chain; (5) generous provision for lubrication.

SLUSH PUMP VALVE
MacClatchie Manufacturing Company

MacClatchie Manufacturing Company, Compton, California, announces an improved type of slush pump valve, which is ready for distribution after a number of months of field testing and perfecting.

This new valve, known as the Airflote, has an air chamber constructed in the body of the valve itself. The arched construction adds strength and rigidity to the body of the valve, decreases the weight and increases displacement.



The reduced weight improves the efficiency and life of the valve and increases the sensitivity of the valve to slight changes in the fluid movement. Quick seating and slight fluid slippage at each reversal of the pump stroke are important results of this sensitivity.

In addition, the new Airflote valve has an outer edge that is designed to withstand the high impact strains and terrific cutting action of the high pressure fluids in today's deep well pumps. Another new feature is the large diameter thread by which the various parts are held together. This thread has a shoulder like a tool joint. It is positively leakproof, will not jar loose in service, and yet can be readily unscrewed when desired to change rubbers. This valve has reversible rubber inserts which provide double life and double efficiency, and it also has large streamline striking surface on the valve seat that materially lengthens the life of the entire valve assembly by decreasing the impact stress per unit area and by maintaining these parts in proper alignment throughout the life of the valve.

This Week with the Industry's EQUIPMENT SUPPLIERS

Schuetz Becomes General Manager For Pittsburgh Screw and Bolt

Pittsburgh Screw & Bolt Corporation, Pittsburgh, Pennsylvania, announces the appointment of Harry W. Schuetz as general manager of the Colona Division, succeeding Walter A. Clarke, who died October 24.

HARRY W. SCHUETZ
New General Manager for Pittsburgh Screw & Bolt Corp.

Schuetz, who has been associated with the company for a number of years, is widely known throughout the oil industry. He will continue his field work in the petroleum industry and contact pipe mills along with his new duties.

Republic Steel Names New Distributors in Five Areas

Republic Steel Corporation, Cleveland, Ohio, recently named five new distributors for tubular products, which include: Bomar Gross, Inc., Jamaica, N. Y.; Drake Supply Company, Los Angeles, Calif.; Iowa Machinery & Supply Company, Des Moines, Iowa; Wilkens Pipe & Supply Company, Peoria, Illinois, and Woodmanse Manufacturing Company, Freeport, Illinois.

Schaefer Joins Federal Truck In Executive Capacity

Federal Motor Truck Company, Detroit, Michigan, recently announced the appointment of K. M. Schaefer as assistant to general manager.

Schaefer's experience in the automotive field dates back to 1922 when he joined Paige Motor Car Company. More recently, he was with the Pontiac Division of General Motors Corporation in service, sales promotion and field capacities, and previous to that was general sales manager of the Norge Corporation, Detroit.

Wheatley Brothers Open Shreveport Warehouse

Wheatley Brothers, pump and valve manufacturers of Tulsa, Oklahoma, recently opened a temporary branch warehouse at Shreveport, Louisiana, pending construction of a permanent structure in that city. The warehouse will be in charge of Glen Taylor, sales engineer, and is located at 209 Lake Avenue, on Supply Row.

Dan O'Shea, vice president of the company, returned to Tulsa last week, having spent some time in Shreveport making arrangements for the new building. He announced the company is planning construction of branch warehouses at Illinois, New Mexico and Kansas.

American Meter Company Elects New Officers

F. H. Payne, president of American Meter Company, New York, at a recent board meeting was elected also as treasurer of the corporation, thereby filling the vacancy created in the office by the recent death of Donald McDonald.

The vacant office of secretary was filled by the election of John Van Norden, formerly assistant secretary. Van Norden was also elected assistant treasurer, and will be in resident charge of the New York general offices at 60 East 42nd Street. He will continue his duties as manager of sales promotion.

Searle New Director for Worthington Pump

The board of directors of Worthington Pump and Machinery Corporation, Harrison, New Jersey, recently elected into their membership F. Gladden Searle of Bronxville, New York. Well known in the food industry field, Searle is also vice president in charge of sales and advertising of the Continental Can Company, and a director of the Vincennes Packing Corporation, Vincennes, Indiana.

Searle started his business career as salesman for the E. H. Huenefeld Company of Cincinnati, Ohio. He was later connected with the Eclipse Stove Company of Mansfield, Ohio, from which company he resigned for military service in 1917. Upon his return from France, Searle joined the Continental Can Company organization as salesman in the State of Indiana, where he remained until 1927. Since that time, he has held successively the positions of district sales manager; assistant manager of sales, packers and cans; manager of sales, packers and cans; and vice president in charge of sales and advertising.

Norton Representative for Dresser and Clark

S. R. Dresser Manufacturing Co., Bradford, Pennsylvania, recently announced the appointment of Chas. E. Norton as Chicago representative for Dresser and its subsidiary, Clark Brothers Company of Olean.

Norton has had seven years of experience with Dresser in various sales and engineering capacities, both in the field and at the home office in Bradford. His activities in the past have also included considerable time spent in gas engine and compressor work. His headquarters at Chicago will be in the Peoples Gas Building.

Gaso Appoints Distributor

Gaso Pump & Burner Manufacturing Company, Tulsa, Oklahoma, has announced the appointment of Service Oil Field Supply Company, Los Angeles, California, as distributors for the Pacific Coast, with headquarters at 5333 Riverside Drive, Los Angeles.

HUNT NOW OFFERS
these
7 SERVICES:

Wire Line Coring
Complete Bit Line
Rig Unitization
Boiler Repairing
Machine Work
Oil Field Welding
Field Repair Work

HUNT TOOL COMPANY
HOUSTON, TEX.
Formerly AUTHORIZED APPLEMAN BIT SERVICE CO.
HUNT WIRE LINE CORE BARRELS

SERVICE SHOPS:
Houston, Joinerville, Talco, Corpus Christi, Bay City, Alvin, Texas . . . . . Rodessa, Jennings, Houma, Louisiana.

Squeaks from the Bull Wheel

Mame Lands a Job

"Mame's got a job as a stenog."
"What, Mame—no."
"Honest."
"Do ya s'pose she'll get by?"
"Well, she may at that. You see, her boss told her right off he's a man of few words, an' that sounded encouragin' to Mame—she don't know very many."

"Doctor, how are my chances?"
"Oh, pretty good, but I wouldn't start reading any continued stories."

Password

Two Scotswomen happened to meet in the street. One was carrying a parcel, and was asked by the other what it was.

"Oh, it's some ham," was the reply. "I always buy ham at Sandy's store."

The other thought she would try some ham, and off she went to Sandy's store.

"I want some ham," she said.
"What kind?" asked the shopkeeper.
"Oh, the same as Mrs. McDonald gets."

The shopkeeper smiled, and leaning confidently over the counter, asked:
"Whaur's yer bottle?"

Help!

The newspaper reporter went to see his editor about a raise.

"My family is on the point of starvation," he moaned. "My wife is terribly ill—and my children are running through the streets without shoes on their little feet."

The reporter felt that his pathetic tale had melted the stony heart of his editor. Surely a boost in salary was now his.

"Boy," enthused the editor, "that's a sock story. Give me three columns—with pictures!"

—Wall Street Journal.

Such Ignorance!

Judge—What's the charge against this man, officer?"

Officer—Bigotry, yer honor. He's got three wives.

Judge—I'm surprised at your ignorance, officer. That's trigonometry, not bigotry.—The Lookout.

Practical Dad

"I've bought the most wonderful thing, dear. It's a luminous lipstick that shines in the dark."

"Just the thing to put on baby so we can give him his bottle without turning on the lights."

Fair Enough

"Do you think the parole system is a failure?"

"No, but I think criminals should be asked to give the prisons a fair trial before they leave."

"Well," she explained, "it's a sort of a little bag of perfume. You put it in your chest and drawers to make them smell sweet."

"I understand what you mean," said the lady, "but isn't it awfully uncomfortable?"

"The process of thinking draws the blood from the feet to the head," an educator informs us. This explains, perhaps, why, in so many cases, if you think twice about a proposition, you get cold feet.—Atlanta Journal.

Stock

Lillian Tyler tells about a couple of green traders sitting around in her firm's board room.

"Terrible about these labor troubles," said the first.

"That's right," replied the other, nodding sagely.

"Affects stocks, too," the first fellow said, and he got that nod and the wise look. "What do you think of the CIO?" he asked his friend.

The other fellow put a hand on his knee, looked him in the eye and put on a significant expression. "I think it'll close lower," he answered.

—Investment Dealers' Digest.

The editor has a friend—a beginner at golf—who, when asked how he came out on his first day on the links, replied that he had made it in eighty.

"Eighty!" ejaculated the editor, "that's really remarkable! Most old-timers would envy you that score. You'll surely be an enthusiast from now on."

"Yes," said the novice, condescendingly, "I'm going back tomorrow and try the second hole."

—Wall Street Journal.

City Visitor: "I see where a factory is putting out milk made from hay."

Farmer: "Well, that ain't mor'n my cows do every day."

Insult

Sergeant: "The general was quite provoked this morning."

Corporal: "What about?"

Sergeant: "He received a letter marked 'private'."

He Had

The pompous judge glared sternly over his spectacles at the tattered prisoner, who had been dragged before the bar of justice on a charge of vagrancy.

"Have you ever earned a dollar in your life?" he asked in scorn.

"Yes, Your Honor," was the response, "I voted for you at the last election."

—Atlanta Two Bells.

.. Yea, Verily

A party of New York sportsmen have announced that everything they bag on their hunting trip in Canada will be sent to New York hospitals. This will probably include the guides and the less nimble members of the party.

Save Your Purchase Orders!

Why pass purchase orders around like so many handbills? PELCO gives you one-stop service: Everything it takes to drill or produce a well to the best advantage in our area, plus modern shop facilities. We've served successful operators for thirty years.

PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe
Cotton Valley—Greggton
Houston